

23°, 337° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z																						
0	52 51.7	+49.5	139.7	52 05.7	+50.1	140.5	51 19.1	+50.7	141.3	50 32.0	+51.3	142.1	49 44.5	+51.7	142.8	48 56.5	+52.2	143.5	48 08.0	+52.7	144.2	47 19.2	+53.1	144.8	0
1	53 41.2	+49.0	138.7	52 55.8	+49.6	139.6	52 09.8	+50.3	140.4	51 23.3	+50.8	141.2	50 36.2	+51.5	142.0	49 48.7	+52.0	142.7	49 00.7	+52.5	143.4	48 12.3	+52.9	144.1	1
2	54 30.2	+48.5	137.7	53 45.4	+49.3	138.7	53 00.1	+49.9	139.5	52 14.1	+50.5	140.4	51 27.7	+51.0	141.2	50 40.7	+51.6	142.0	49 53.2	+52.1	142.7	49 05.2	+52.6	143.4	2
3	55 18.7	+47.3	136.7	54 34.7	+48.7	137.7	53 50.0	+49.4	138.6	53 04.6	+50.1	139.5	52 18.7	+50.7	140.3	51 32.3	+51.2	141.1	50 45.3	+51.8	141.9	49 57.8	+52.3	142.7	3
4	56 06.6	+47.4	135.6	55 23.4	+48.2	136.7	54 39.4	+48.9	137.6	53 54.7	+49.6	138.6	53 09.4	+50.3	139.5	52 23.5	+50.9	140.3	51 37.1	+51.5	141.1	50 50.1	+52.0	141.9	4
5	56 54.0	+46.6	134.5	56 11.6	+47.6	135.6	55 28.3	+48.4	136.6	54 44.3	+49.2	137.6	53 59.7	+49.8	138.5	53 14.4	+50.5	139.4	52 28.6	+51.1	140.3	51 42.1	+51.7	141.1	5
6	57 40.8	+46.1	133.4	56 59.2	+47.0	134.5	56 16.7	+47.9	135.6	55 33.5	+48.6	136.6	54 49.5	+49.4	137.6	54 04.9	+50.1	138.5	53 19.7	+50.7	139.4	52 33.8	+51.3	140.3	6
7	58 26.9	+45.4	132.2	57 46.2	+46.3	133.3	57 04.6	+47.2	134.5	56 22.1	+48.1	135.6	55 38.9	+48.9	136.6	54 55.0	+49.6	137.6	54 10.4	+50.3	138.5	53 25.1	+50.9	139.4	7
8	59 12.3	+44.7	130.9	58 32.5	+45.7	132.1	57 51.8	+46.6	133.3	57 10.2	+47.5	134.5	56 27.8	+48.3	135.5	55 44.6	+49.1	136.6	55 00.7	+49.8	137.6	54 16.0	+50.5	138.5	8
9	59 57.0	+43.8	129.6	59 18.2	+44.9	130.9	58 38.4	+45.9	132.1	57 57.7	+46.9	133.3	57 16.1	+47.8	134.5	56 33.7	+48.6	135.5	55 50.5	+49.3	136.6	55 06.5	+50.1	137.6	9
10	60 40.8	+42.9	128.2	60 03.1	+44.1	129.6	59 24.3	+45.2	130.9	58 44.6	+46.1	132.1	58 03.9	+47.1	133.3	57 22.3	+47.9	134.5	56 39.8	+48.8	135.6	55 56.6	+49.6	136.6	10
11	61 23.7	+41.9	126.8	60 47.2	+43.2	128.2	60 09.5	+44.3	129.6	59 30.7	+45.5	130.9	58 51.0	+46.4	132.1	58 10.2	+47.4	133.3	57 28.6	+48.3	134.5	56 46.2	+49.0	135.6	11
12	62 05.6	+41.0	125.3	61 30.4	+42.2	126.8	60 53.8	+43.5	128.2	60 16.2	+44.6	129.6	59 37.4	+45.7	130.9	58 57.6	+46.7	132.2	58 16.9	+47.6	133.4	57 35.2	+48.5	134.5	12
13	62 46.6	+39.8	123.7	62 12.6	+41.2	125.3	61 37.3	+42.5	126.8	61 00.8	+43.7	128.2	60 23.1	+44.9	129.6	59 44.3	+46.0	130.9	59 04.5	+47.0	132.2	58 23.7	+47.9	133.4	13
14	63 26.4	+38.6	122.0	62 53.8	+40.1	123.7	62 19.8	+41.6	125.3	61 44.5	+42.9	126.8	61 08.0	+44.1	128.3	60 30.3	+45.2	129.6	59 51.5	+46.2	131.0	59 11.6	+47.3	132.2	14
15	64 05.0	+37.3	120.3	63 33.9	+38.9	122.0	63 01.4	+40.4	123.7	62 27.4	+41.8	125.3	61 52.1	+43.1	126.8	61 15.5	+44.3	128.3	60 37.7	+45.5	129.7	59 58.9	+46.5	131.0	15
16	64 42.3	+35.9	118.5	64 12.8	+37.7	120.3	63 41.8	+39.2	122.0	63 09.2	+40.7	123.7	62 35.2	+42.1	125.3	61 59.8	+43.4	126.9	61 23.2	+44.6	128.3	60 45.4	+45.8	129.8	16
17	65 18.2	+34.4	116.6	64 50.5	+36.2	118.5	64 21.0	+38.0	120.3	63 49.9	+39.6	122.1	63 17.3	+41.0	123.8	62 43.2	+42.5	125.4	62 07.8	+43.8	126.9	61 31.2	+44.9	128.4	17
18	65 52.6	+32.9	114.6	65 26.7	+34.8	116.6	64 59.0	+36.5	118.5	64 29.5	+38.2	120.4	63 58.3	+39.9	122.1	63 25.7	+41.3	123.8	62 51.6	+42.7	125.5	62 16.1	+44.1	127.0	18
19	66 25.5	+31.1	112.5	66 01.5	+33.1	114.6	65 35.5	+35.1	116.6	65 07.7	+37.0	118.5	64 38.2	+38.6	120.4	64 07.0	+40.2	122.2	63 34.3	+41.7	123.9	63 00.2	+43.0	125.5	19
20	66 56.6	+29.2	110.4	66 34.6	+31.5	112.5	66 10.6	+33.5	114.6	65 44.7	+35.4	116.7	65 16.8	+37.3	118.6	64 47.3	+38.9	120.5	64 16.0	+40.6	122.3	63 43.2	+42.1	124.0	20
21	67 25.8	+27.4	108.1	67 06.1	+29.6	110.4	66 44.1	+31.8	112.6	66 20.1	+33.8	114.7	65 54.1	+35.7	116.7	65 26.2	+37.6	118.7	64 56.6	+39.3	120.5	64 25.3	+40.8	122.3	21
22	67 53.2	+25.2	105.8	67 35.7	+27.6	108.1	67 15.9	+29.9	110.4	66 53.9	+32.1	112.6	66 29.8	+34.2	114.7	66 03.8	+36.1	116.8	65 35.9	+37.9	118.7	65 06.1	+39.7	120.6	22
23	68 18.4	+23.0	103.3	68 03.3	+25.6	105.8	67 45.8	+28.0	108.1	67 26.0	+30.3	110.4	67 04.0	+32.5	112.6	66 39.9	+34.5	114.8	66 13.8	+36.5	116.8	65 45.8	+38.3	118.8	23
24	68 41.4	+20.7	100.8	68 28.9	+23.3	103.3	68 13.8	+25.9	105.8	67 56.3	+28.3	108.1	67 36.5	+30.6	110.4	67 14.4	+32.9	112.7	66 50.3	+34.9	114.8	66 24.1	+36.8	116.9	24
25	69 02.1	+18.3	98.2	68 52.2	+21.0	100.8	68 39.7	+23.6	103.3	68 24.6	+26.3	105.8	68 07.1	+28.7	108.2	67 47.3	+31.0	110.5	67 25.2	+33.1	112.7	67 00.9	+35.3	114.9	25
26	69 20.4	+15.7	95.5	69 13.2	+18.5	98.2	69 03.3	+21.4	100.7	68 50.9	+23.9	103.3	68 35.8	+26.5	105.8	68 18.3	+29.0	108.2	67 58.3	+31.4	110.5	67 36.2	+33.5	112.8	26
27	69 36.1	+13.0	92.8	69 31.7	+16.0	95.5	69 24.7	+18.8	98.1	69 14.8	+21.7	100.7	69 02.3	+24.4	103.3	68 47.3	+26.9	105.8	68 29.7	+29.4	108.3	68 09.7	+31.7	110.6	27
28	69 49.1	+10.3	90.0	69 47.7	+13.3	92.7	69 43.5	+16.2	95.4	69 36.5	+19.1	98.1	69 26.7	+21.9	100.7	69 14.2	+24.6	103.3	68 59.1	+27.2	105.8	68 41.4	+29.8	108.3	28
29	69 59.4	+7.5	87.1	70 01.0	+10.5	89.8	69 59.7	+13.6	92.6	69 55.6	+16.5	95.3	69 48.6	+19.4	98.0	69 38.8	+22.3	100.7	69 26.3	+25.0	103.3	69 11.2	+27.6	105.9	29
30	70 06.9	+4.6	84.2	70 11.5	+7.7	87.0	70 13.3	+10.7	89.7	70 12.1	+13.8	92.5	70 08.0	+16.8	95.3	70 01.1	+19.7	98.0	69 51.3	+22.6	100.7	69 38.8	+25.3	103.4	30
31	70 11.5	+1.8	81.3	70 19.2	+4.8	84.0	70 24.0	+7.9	86.8	70 25.9	+11.0	89.6	70 24.8	+14.1	92.4	70 20.8	+17.1	95.2	70 13.9	+20.0	98.0	70 04.1	+22.9	100.7	31
32	70 13.3	-1.2	78.3	70 24.0	+1.9	81.1	70 31.9	+5.0	83.8	70 36.9	+8.1	86.7	70 38.9	+11.2	89.5	70 37.9	+14.3	92.4	70 33.9	+17.4	95.2	70 27.0	+20.4	98.0	32
33	70 12.1	-4.1	75.3	70 24.0	-1.2	78.3	70 31.9	-1.2	81.1	70 36.9	+2.0	80.8	70 45.0	+5.1	83.7	70 52.2	+11.4	89.4	70 51.3	+14.6	92.3	70 47.4	+17.7	95.2	33
34	70 08.0	-6.9	72.4	70 24.8	-4.0	75.1	70 31.9	-2.7	78.1	70 36.9	-1.0	80.6	70 45.0	-3.5	83.7	70 51.3	-8.5	89.3	71 05.1	+11.6	93.2	71 48.3	-3.8	92.2	34
35	70 01.1	-9.8	69.5	70 20.8	-6.9	72.1	70 37.9	-4.0	74.8	70 52.2	-0.9	77.6	71 03.6	+2.3	80.4	71 12.1	+5.4	83.3	71 17.5	+8.7	86.3	71 19.9	+11.9	89.2	35
36	69 51.3	-12.5	66.6	70 13.9	-9.8	69.2	70 33.9	-6.9	71.8	70 51.3	-8.0	74.6	71 05.9	-0.8	77.4	71 17.5	+2.4	80.2	71 26.2	+5.6	83.2	71 31.8			

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 23° , 337°

Dec.	30°			31°			32°			33°			34°			35°			36°			Dec.					
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z			
0	52 51.7 -49.9	139.7	52 05.7 -50.5	140.5	51 19.1 -51.0	141.3	50 32.0 -51.5	142.1	49 44.5 -52.1	142.8	48 56.5 -52.6	143.5	48 08.0 -53.0	144.2	47 19.2 -53.4	144.8	47 50.1 -54.3	147.9	42 50.1 -54.3	147.9	46 25.8 -53.6	145.5	45 32.2 -53.8	146.1	0		
1	52 01.8 -50.3	140.6	51 15.2 -50.9	141.4	50 28.1 -51.4	142.1	49 40.5 -51.9	142.9	48 52.4 -52.4	143.6	48 03.9 -52.8	144.2	47 15.0 -53.2	144.9	46 21.8 -53.4	145.5	45 32.2 -53.8	146.1	42 46.8 -54.2	148.0	41 55.8 -54.6	148.5	40 58.1 -54.5	148.6	41 01.2 -54.7	149.1	1
2	51 11.5 -50.7	141.5	50 24.3 -51.2	142.2	49 36.7 -51.8	142.9	48 48.6 -52.2	143.6	48 00.0 -52.6	144.3	47 11.1 -53.0	144.9	46 21.8 -53.4	145.5	45 28.4 -53.7	146.2	44 38.4 -54.0	146.7	43 44.4 -54.3	147.4	42 50.1 -54.3	147.9	41 55.8 -54.6	148.5	40 58.1 -54.5	148.6	3
3	50 20.8 -51.0	142.3	49 33.1 -51.6	143.0	48 44.9 -52.0	143.7	47 56.4 -52.5	144.4	47 07.4 -52.9	145.0	46 18.1 -53.3	145.6	45 28.4 -53.7	146.2	44 34.7 -53.8	146.8	43 44.4 -54.3	147.4	42 50.1 -54.3	147.9	41 55.8 -54.6	148.5	40 58.1 -54.5	148.6	39 11.7 -55.0	150.1	4
4	49 29.8 -51.4	143.1	48 41.5 -51.8	143.8	47 52.9 -52.3	144.5	47 03.9 -52.7	145.1	46 14.5 -53.1	145.7	45 24.8 -53.5	146.3	44 34.7 -53.8	146.8	43 44.4 -54.3	147.4	42 50.1 -54.3	147.9	41 55.8 -54.6	148.5	40 58.1 -54.5	148.6	39 09.3 -55.4	150.1	3		
5	48 38.4 -51.7	143.9	47 49.7 -52.1	144.6	47 00.6 -52.6	145.2	46 11.2 -53.0	145.8	45 21.4 -53.4	146.4	44 31.3 -53.7	146.9	43 40.9 -54.1	147.4	42 50.1 -54.3	147.9	41 55.8 -54.6	148.5	40 58.1 -54.5	148.6	39 11.7 -55.0	150.1	38 16.7 -55.2	150.6	10		
6	47 46.7 -52.0	144.7	46 57.6 -52.5	145.3	46 08.0 -52.8	145.9	45 18.2 -53.2	146.5	44 28.0 -53.5	147.0	43 37.6 -54.0	147.5	42 46.8 -54.2	148.0	41 55.8 -54.6	148.5	40 58.1 -54.5	148.6	39 19.0 -55.1	150.1	38 21.5 -55.2	151.1	37 21.5 -55.2	151.1	1		
7	46 54.7 -52.2	145.4	46 05.1 -52.6	146.0	45 15.2 -53.0	146.6	44 25.0 -53.4	147.1	43 34.5 -53.8	147.6	42 43.6 -54.0	148.1	41 52.6 -54.5	148.6	40 58.1 -54.5	148.6	39 19.0 -55.1	150.1	38 26.3 -55.4	151.6	37 48.5 -55.9	153.9	7				
8	46 02.5 -52.6	146.1	45 12.5 -52.9	146.7	44 22.2 -53.3	147.2	43 31.6 -53.6	147.7	42 40.7 -54.0	148.2	41 49.6 -54.3	148.7	40 58.1 -54.5	149.2	39 03.6 -54.7	149.7	38 19.0 -55.1	150.1	37 26.7 -55.4	152.3	34 35.5 -55.6	152.6	18				
9	45 09.9 -52.7	146.8	44 19.6 -53.2	147.4	43 28.9 -53.5	147.9	42 38.0 -53.9	148.4	41 46.7 -54.1	148.8	40 55.3 -54.4	149.3	39 03.6 -54.7	149.7	38 11.7 -55.0	150.1	37 21.5 -55.2	151.1	36 26.3 -55.4	151.6	35 30.9 -55.4	152.1	9				
10	44 17.2 -53.0	147.5	43 26.4 -53.3	148.0	42 35.4 -53.6	148.5	41 44.1 -53.9	149.0	40 52.6 -54.3	149.4	40 00.9 -54.6	149.8	39 08.9 -54.8	150.3	38 16.7 -55.2	150.6	37 21.5 -55.2	151.1	36 26.3 -55.4	151.6	35 30.9 -55.4	152.1	13				
11	43 24.2 -53.2	148.1	42 33.1 -53.5	148.6	41 41.8 -53.9	149.1	40 50.2 -54.2	149.5	39 58.3 -54.4	150.0	39 06.3 -54.8	150.4	38 14.0 -55.0	150.8	37 21.5 -55.2	151.1	36 26.3 -55.4	151.6	35 30.9 -55.4	152.1	34 35.5 -55.6	152.6	14				
12	42 31.0 -53.4	148.8	41 39.6 -53.8	149.2	40 47.9 -54.0	149.7	39 56.0 -54.3	150.1	39 03.9 -54.6	150.5	38 17.0 -55.0	151.0	37 19.0 -55.1	151.3	36 23.9 -55.2	151.8	35 30.9 -55.4	152.1	34 35.5 -55.6	152.6	15						
13	41 37.6 -53.6	149.4	40 45.8 -53.9	149.8	39 53.9 -54.2	150.2	39 01.7 -54.5	150.7	38 09.3 -54.8	151.0	37 16.7 -55.0	151.4	36 21.7 -55.1	151.9	35 28.7 -55.4	152.3	34 35.5 -55.6	152.6	16								
14	40 44.0 -53.8	150.0	39 51.9 -54.0	150.4	38 59.7 -54.4	150.8	38 07.2 -54.6	151.2	37 14.5 -54.8	151.6	36 21.7 -55.1	151.9	35 25.9 -55.4	152.3	34 35.5 -55.6	152.6	17										
15	39 50.2 -53.9	150.6	38 57.9 -54.3	151.0	38 05.3 -54.5	151.3	37 12.6 -54.8	151.7	36 19.7 -55.0	152.1	35 26.6 -55.3	152.4	34 33.3 -55.4	152.7	33 39.9 -55.7	153.0	32 44.2 -55.7	153.2	31 48.5 -55.9	153.9	17						
16	38 56.3 -54.1	151.1	38 03.6 -54.3	151.5	37 10.8 -54.6	151.9	36 17.8 -54.9	152.2	35 24.7 -55.2	152.6	34 31.3 -55.3	152.9	33 37.9 -55.6	153.2	32 44.2 -55.7	153.5	31 48.5 -55.9	153.9	30 52.6 -55.9	154.3	26						
17	38 02.2 -54.3	151.7	37 09.3 -54.5	152.0	36 16.2 -54.8	152.4	35 22.9 -55.0	152.7	34 29.5 -55.2	153.0	33 36.0 -55.5	153.3	32 42.3 -55.7	153.6	31 48.5 -55.9	153.9	30 52.6 -55.9	154.3	27								
18	37 07.9 -54.4	152.2	36 14.8 -54.7	152.6	35 21.4 -54.9	152.9	34 27.9 -55.1	153.2	33 34.3 -55.3	153.5	32 40.5 -55.5	153.8	31 46.6 -55.7	154.1	30 52.6 -55.9	154.3	29 03.6 -55.7	154.9	29 56.7 -56.0	154.8	19						
19	36 13.5 -54.5	152.7	35 20.1 -54.8	153.1	34 26.5 -55.0	153.4	33 32.8 -55.2	153.7	32 39.0 -55.4	154.0	31 45.0 -55.6	154.2	30 50.9 -55.7	154.5	29 56.7 -56.0	154.8	28 03.6 -55.7	154.9	27 08.4 -56.2	156.0	22						
20	35 19.0 -54.7	153.3	34 25.3 -54.8	153.6	33 31.5 -55.1	153.9	32 37.6 -55.3	154.2	31 43.6 -55.6	154.4	30 49.4 -55.8	154.7	29 55.1 -55.9	154.9	28 00.7 -56.1	155.2	27 08.4 -56.2	156.2	26 12.2 -56.3	156.4	23						
21	34 24.3 -54.7	153.8	33 30.5 -55.0	154.1	32 36.4 -55.2	154.3	31 42.3 -55.4	154.6	30 48.0 -55.6	154.9	29 53.6 -55.8	155.1	28 04.6 -56.2	155.6	27 08.4 -56.2	156.0	26 12.2 -56.3	156.4	21								
22	33 29.6 -54.9	154.3	32 35.5 -55.2	154.5	31 41.2 -55.3	154.8	30 46.9 -55.5	155.1	29 52.4 -55.7	155.3	28 57.8 -55.8	155.5	28 03.2 -56.1	155.8	27 08.4 -56.2	156.0	26 12.2 -56.3	156.4	23								
23	32 34.7 -55.0	154.7	31 40.3 -55.2	155.0	30 45.9 -55.4	155.3	29 51.4 -55.6	155.5	28 56.7 -55.8	155.7	28 02.0 -56.0	156.0	27 07.1 -56.1	156.2	26 11.0 -56.2	156.6	25 15.9 -56.3	156.8	24								
24	31 39.7 -55.1	155.2	30 45.1 -55.5	155.5	29 50.5 -55.5	155.7	28 55.8 -55.7	155.9	28 00.9 -55.8	156.2	27 06.0 -56.0	156.4	26 11.0 -56.2	156.6	25 15.9 -56.3	156.8	24 30.2 -56.5	158.2	23								
25	30 44.6 -55.2	155.7	29 49.8 -55.4	155.9	28 55.0 -55.6	156.1	28 00.1 -55.8	156.4	27 05.1 -55.9	156.6	26 10.0 -56.1	156.8	25 14.8 -56.2	157.0	24 19.6 -56.4	157.1	23 21.5 -56.5	157.2	22 26.7 -56.5	157.9	27						
26	29 49.4 -55.3	156.1	28 54.4 -55.4	156.3	27 59.4 -55.6	156.6	27 04.3 -55.8	156.8	26 09.2 -56.0	157.0	25 13.9 -56.1	157.2	24 18.6 -56.3	157.5	23 23.2 -56.5	157.5	22 26.7 -56.5	157.9	21 30.2 -56.5	158.2	28						
27	28 54.1 -55.4	156.6	27 59.0 -55.6	156.8	27 03.8 -55.7	157.0	26 08.5 -55.9	157.2	25 13.2 -56.1	157.4	24 17.8 -56.2	157.5	23 22.3 -56.4	157.7	22 26.7 -56.5	157.9	21 30.2 -56.5	158.2	20 37.7 -56.7	158.7	29						
28	27 58.7 -55.5	157.0	27 03.4 -55.6	157.2	26 08.1 -55.8	157.4	25 12.6 -55.9	157.6	24 17.1 -56.1	157.8	23 21.6 -56.3	157.9	22 25.9 -56.4	158.1	21 30.2 -56.5	158.6	20 33.7 -56.6	158.6	19 39.7 -56.7	158.9	29						
29	27 03.2 -55.6	157.4	26 07.8 -55.7	157.6	25 12.3 -55.9	157.8	24 16.7 -56.1	158.0	23 21.0 -56.2	158.1	22 25.3 -56.3	158.3	21 29.5 -56.4	158.5	20 33.7 -56.6	158.6	19 37.1 -56.6	158.9	18 40.5 -56.7	159.2	30						
30	26 07.7 -55.6	157.9	25 12.1 -55.8	158.0	24 16.4 -55.9	158.2	23 20.6 -56.0	158.4	22 24.8 -56.2	158.5	21 29.0 -56.4	158.7	20 33.1 -56.5	158.8	19 37.1 -56.6	158.9	18 40.5 -56.7	159.2	17 44.4 -56.9	161.0	36						
31	25 12.1 -55.7	158.3	24 16.3 -55.8	158.4	23 20.5 -56.0	158.6	22 24.6 -56.2	158.8	21 28.6 -56.3	158.9	20 32.6 -56.4	159.0	19 36.6 -56.4	159.2	18 40.5 -56.7	159.3	17 44.4 -56.9	161.0	16 40.5 -56.7	161.2	31						
32	24 16.4 -55.8	158.7	23 20.5 -55.9	158.8	22 24.5 -56.1	159.0	21 28.4 -56.1	159.1	20 32.3 -56.3	159.5	19 36.2 -56.4	159.3	18 40.0 -56.														

24°, 336° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z																						
0	52 17.6	+48.8	138.3	51 32.5	+49.5	139.2	50 46.8	+50.1	140.0	50 00.6	+50.7	140.7	49 13.9	+51.3	141.5	48 26.8	+51.7	142.2	47 39.2	+52.2	142.9	46 51.1	+52.7	143.5	0
1	53 06.4	+48.4	137.4	52 22.0	+49.0	138.2	51 36.9	+49.7	139.1	50 51.3	+50.3	139.9	50 05.2	+50.8	140.7	49 18.5	+51.4	141.4	48 31.4	+51.9	142.1	47 43.8	+52.4	142.8	1
2	53 54.8	+47.8	136.4	53 11.0	+48.6	137.3	52 26.6	+49.3	138.2	51 41.6	+49.9	139.0	50 56.0	+50.5	139.8	50 09.9	+51.1	140.6	49 23.3	+51.6	141.4	48 36.2	+52.1	142.1	2
3	54 42.6	+47.3	135.3	53 59.6	+48.0	136.3	53 15.9	+48.7	137.2	52 31.5	+49.5	138.1	51 46.5	+50.1	139.0	51 01.0	+50.7	139.8	50 14.9	+51.3	140.6	49 28.3	+51.8	141.3	3
4	55 29.9	+46.7	134.2	54 47.6	+47.5	135.3	54 04.6	+48.3	136.2	53 21.0	+49.0	137.2	52 36.6	+49.7	138.1	51 51.7	+50.3	138.9	51 06.2	+50.9	139.7	50 20.1	+51.5	140.5	4
5	56 16.6	+46.2	133.1	55 35.1	+47.0	134.2	54 52.9	+47.8	135.2	54 10.0	+48.5	136.2	53 26.3	+49.2	137.1	52 42.0	+49.8	138.0	51 57.1	+50.5	138.9	51 11.6	+51.1	139.7	5
6	57 02.6	+45.4	132.0	56 22.1	+46.3	133.1	55 40.7	+47.1	134.2	54 58.5	+48.0	135.2	54 15.5	+48.8	136.2	53 31.9	+49.5	137.1	52 47.6	+50.2	138.0	52 02.7	+50.8	138.9	6
7	57 48.0	+44.6	130.7	57 08.4	+45.6	131.9	56 27.8	+46.6	133.1	55 46.5	+47.4	134.1	55 04.3	+48.2	135.2	54 21.4	+49.0	136.2	53 37.8	+49.7	137.1	52 53.5	+50.3	138.0	7
8	58 32.6	+43.8	129.5	57 54.0	+44.9	130.7	57 14.4	+45.9	131.9	56 33.9	+46.8	133.0	55 52.5	+47.7	134.1	55 10.4	+48.4	135.1	54 27.5	+49.2	136.1	53 43.8	+50.0	137.1	8
9	59 16.5	+43.0	128.2	58 38.9	+44.1	129.5	58 00.3	+45.2	130.7	57 20.7	+46.1	131.9	56 58.7	+48.3	134.1	55 16.7	+48.7	135.1	54 33.8	+49.4	136.1	9			
10	59 59.5	+42.2	126.8	59 23.0	+43.4	128.1	58 45.5	+44.4	129.4	58 06.8	+45.5	130.7	57 27.2	+46.5	131.9	56 46.7	+47.4	133.0	56 05.4	+48.2	134.1	55 23.2	+49.0	135.2	10
11	60 41.7	+41.1	125.3	60 06.4	+42.4	126.8	59 29.9	+43.6	128.1	58 52.3	+44.7	129.4	58 13.7	+45.7	130.7	57 34.1	+46.7	131.9	56 53.6	+47.6	133.0	56 12.2	+48.4	134.1	11
12	61 22.8	+40.2	123.8	60 48.8	+41.4	125.3	60 13.5	+42.7	126.8	59 37.0	+43.9	128.1	58 59.4	+45.0	129.4	58 20.8	+46.0	130.7	57 41.2	+46.9	131.9	57 00.6	+47.9	133.1	12
13	62 03.0	+39.0	122.3	61 30.2	+40.5	123.8	60 56.2	+41.7	125.3	60 20.9	+43.0	126.8	59 44.4	+44.1	128.1	59 06.8	+45.2	129.5	58 28.1	+46.3	130.7	57 48.5	+47.2	131.9	13
14	62 42.0	+37.8	120.6	62 10.7	+39.3	122.3	61 37.9	+40.8	123.8	61 03.9	+42.0	125.3	60 28.5	+43.4	126.8	59 52.0	+44.5	128.2	59 14.4	+45.6	129.5	58 35.7	+46.6	130.8	14
15	63 19.8	+36.5	118.9	62 50.0	+38.1	120.6	62 18.7	+39.6	122.3	61 45.9	+41.1	123.9	61 11.9	+42.3	125.4	60 36.5	+43.6	126.8	60 00.0	+44.7	128.2	59 22.3	+45.9	129.5	15
16	63 56.3	+35.2	117.1	63 28.1	+36.9	118.9	62 58.3	+38.5	120.6	62 27.0	+40.0	122.3	61 54.2	+41.4	123.9	61 20.1	+42.7	125.4	60 44.7	+44.0	126.9	60 08.2	+45.0	128.3	16
17	64 31.5	+33.7	115.3	64 05.0	+35.5	117.1	63 36.8	+37.2	118.9	63 07.0	+38.7	120.7	62 35.6	+40.3	122.3	62 02.8	+41.7	123.9	61 28.7	+43.0	125.5	60 53.2	+44.3	126.9	17
18	65 05.2	+32.1	113.3	64 40.5	+34.0	115.3	64 14.0	+35.8	117.1	63 45.7	+37.6	119.0	63 15.9	+39.1	120.7	62 44.5	+40.6	122.4	62 11.7	+42.0	124.0	61 37.5	+43.3	125.5	18
19	65 37.3	+30.4	111.3	65 14.5	+32.4	113.3	64 49.8	+34.3	115.3	64 23.3	+36.1	117.2	63 55.0	+37.9	119.0	63 25.1	+39.5	120.7	62 53.7	+40.9	122.4	62 20.8	+42.4	124.0	19
20	66 07.7	+28.6	109.2	65 46.9	+30.8	111.3	65 24.1	+32.8	113.3	64 59.4	+34.7	115.3	64 32.9	+36.5	117.2	64 04.6	+38.2	119.0	63 34.6	+39.8	120.8	63 03.2	+41.3	122.5	20
21	66 36.3	+26.7	107.0	66 17.7	+28.9	109.2	65 56.9	+31.1	111.3	65 34.1	+33.1	113.4	65 09.4	+35.0	115.3	64 42.8	+36.4	117.3	64 14.4	+38.6	119.1	63 44.5	+40.1	120.9	21
22	67 03.0	+24.7	104.7	66 46.6	+27.1	107.0	66 28.0	+29.3	109.2	66 07.2	+31.5	111.3	65 44.4	+33.5	113.4	65 19.6	+35.4	115.4	64 53.0	+37.2	117.3	64 24.6	+38.9	119.2	22
23	67 27.7	+22.6	102.4	67 13.7	+25.0	104.7	66 57.3	+27.4	107.0	66 38.7	+29.6	109.2	66 17.9	+31.8	111.3	65 55.0	+33.9	113.4	65 30.2	+35.8	115.4	65 03.5	+37.6	117.4	23
24	67 50.3	+20.3	99.9	67 38.7	+22.9	102.3	67 24.7	+25.4	104.7	67 08.3	+30.0	109.2	66 49.7	+30.0	109.2	66 28.9	+32.1	111.4	66 06.0	+34.2	113.5	65 41.1	+36.1	115.5	24
25	68 10.6	+18.0	97.4	68 01.6	+20.6	99.9	67 50.1	+23.2	102.3	67 36.1	+25.7	104.7	67 19.7	+28.1	107.0	67 01.0	+30.4	109.2	66 40.2	+32.5	111.4	66 17.2	+34.6	113.6	25
26	68 28.6	+15.6	94.8	68 22.2	+18.3	97.3	68 13.3	+20.9	99.8	68 01.8	+23.5	102.3	67 47.8	+26.8	104.7	67 31.4	+28.4	107.0	67 27.7	+30.7	109.3	66 51.8	+32.9	111.5	26
27	68 44.2	+12.9	92.2	68 40.5	+15.8	94.7	68 34.2	+18.6	97.3	68 25.3	+21.3	99.8	68 13.8	+23.9	102.3	67 59.8	+26.4	104.7	67 43.4	+28.8	107.1	67 24.7	+31.1	109.4	27
28	68 57.1	+10.4	89.5	68 56.3	+13.3	92.1	68 52.8	+16.1	94.7	68 46.6	+18.9	97.2	68 37.7	+21.6	99.8	68 26.2	+24.3	102.3	68 12.2	+26.8	104.7	67 55.8	+29.2	107.1	28
29	69 07.5	+7.7	86.7	69 09.6	+10.6	89.3	69 08.9	+13.5	92.0	69 05.5	+16.3	94.6	68 59.3	+19.2	97.2	68 50.5	+21.9	99.8	68 39.0	+24.5	102.3	68 25.0	+27.1	104.8	29
30	69 15.2	+5.0	83.9	69 20.2	+7.9	86.6	69 22.4	+10.8	89.2	69 21.8	+13.8	91.9	69 18.5	+16.6	94.5	69 12.4	+19.4	97.2	69 03.5	+22.3	99.7	68 52.1	+24.9	102.3	30
31	69 20.2	+2.2	81.1	69 28.1	+5.1	83.8	69 33.2	+8.1	86.4	69 35.6	+11.1	89.1	69 35.1	+14.0	91.8	69 31.8	+17.0	94.5	69 25.8	+19.8	97.1	69 17.0	+22.5	99.8	31
32	69 22.4	-0.6	78.3	69 33.2	+2.4	80.9	69 41.3	+5.4	83.6	69 46.7	+8.3	86.3	69 41.1	+11.3	89.0	69 48.8	+13.4	91.7	69 45.6	+17.2	94.4	69 39.5	+20.1	97.1	32
33	69 21.8	-3.3	75.4	69 35.6	-0.5	78.0	69 46.7	+2.4	80.7	69 55.0	+5.4	83.4	70 00.4	+8.5	86.1	70 03.1	+11.5	88.9	70 02.8	+14.5	91.6	69 59.6	+17.6	94.4	33
34	69 18.5	-6.1	72.6	69 35.1	-3.2	75.2	69 49.1	-0.3	77.8	70 00.4	+2.7	80.5	70 08.9	+5.7	83.2	70 14.6	+8.7	86.0	70 17.3	+11.8	88.8	70 17.2	+14.8	91.6	34
35	69 12.4	-8.9	69.8	69 31.8	-6.0	72.3	69 48.8	-3.2	74.9	70 03.1	-0.3	77.6	70 14.6	+2.7	80.3	70 23.3	+5.8	83.0	70 29.1	+8.9	85.9	70 32.0	+12.0	88.7	35
36	69 03.5	-11.4	67.0	69 25.8	-8.8	69.5	69 45.6	-6.1	72.0	70 02.8	-3.2	74.6	70 17.3	-0.1	77.3	70 29.1	+2.9	80.1	70 38.0	+6.0	82.9	70 44.0	+9.0	85.7	36
37	68																								

LATITUDE CONTRARY NAME TO DECLINATION **L.H.A. 24°, 336°**

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	52	17.6	-49.3	138.3	51	32.5	-49.9	139.2	50	46.8	-50.4	140.0	50	00.6	-51.0	140.7	49	13.9	-51.5	141.5	48	26.8	-52.1	142.2	47	39.2	-52.5	142.9	46	51.1	-52.9	143.5	0
1	51	28.3	-49.7	139.2	50	42.6	-50.3	140.0	49	56.4	-50.9	140.8	49	09.6	-51.3	141.5	48	22.4	-51.8	142.3	47	34.7	-52.3	142.9	46	46.7	-52.8	143.6	45	58.2	-53.2	144.2	1
2	50	38.6	-50.0	140.1	49	52.3	-50.6	140.9	49	05.5	-51.1	141.6	48	18.3	-51.7	142.3	47	30.6	-52.2	143.0	46	42.4	-52.5	143.6	45	53.9	-53.0	144.3	45	05.0	-53.3	144.9	2
3	49	48.6	-50.5	141.0	49	01.7	-51.0	141.7	48	14.4	-51.5	142.4	47	26.6	-51.9	143.1	46	38.4	-52.4	143.7	45	49.9	-52.9	144.3	45	00.9	-53.2	144.9	44	11.7	-53.6	145.5	3
4	48	58.1	-50.8	141.8	48	10.7	-51.3	142.5	47	22.9	-51.8	143.2	46	34.7	-52.3	143.8	45	46.0	-52.6	144.4	44	57.0	-53.0	145.0	44	07.7	-53.4	145.6	43	18.1	-53.8	146.1	4
5	48	07.3	-51.1	142.6	47	19.4	-51.6	143.3	46	31.1	-52.0	143.9	45	42.4	-52.5	144.5	44	53.4	-52.9	145.1	44	04.0	-53.3	145.7	43	14.3	-53.6	146.2	42	24.3	-54.0	146.7	5
6	47	16.2	-51.5	143.4	46	27.8	-51.9	144.0	45	39.1	-52.4	144.6	44	49.9	-52.7	145.2	44	00.5	-53.1	145.8	43	10.7	-53.4	146.3	42	53.9	-54.8	146.8	41	30.3	-54.1	147.3	6
7	46	24.7	-51.7	144.2	45	35.9	-52.1	144.8	44	46.7	-52.5	145.3	43	57.2	-52.9	145.9	43	07.4	-53.3	146.4	42	17.3	-53.7	146.9	41	26.8	-54.0	147.4	40	36.2	-54.4	147.9	7
8	45	33.0	-52.0	144.9	44	43.8	-52.4	145.5	43	54.2	-52.8	146.0	43	04.3	-53.2	146.5	42	14.1	-53.5	147.0	41	23.6	-53.9	147.5	40	32.8	-54.1	148.0	39	41.8	-54.4	148.4	8
9	44	41.0	-52.2	145.6	43	51.4	-52.7	146.1	43	01.4	-53.0	146.7	42	11.1	-53.3	147.2	41	20.6	-53.7	147.7	40	29.7	-54.0	148.1	39	38.7	-54.3	148.6	38	47.4	-54.6	149.0	9
10	43	48.8	-52.5	146.3	42	58.7	-52.8	146.8	42	08.4	-53.2	147.3	41	17.8	-53.6	147.8	40	26.9	-53.9	148.2	39	35.7	-54.2	148.7	38	44.4	-54.5	149.1	37	52.8	-54.8	149.5	10
11	42	56.3	-52.7	146.9	42	05.9	-53.1	147.4	41	15.2	-53.4	147.9	40	24.2	-53.7	148.4	39	33.0	-54.0	148.8	38	41.5	-54.3	149.2	37	49.9	-54.6	149.6	36	58.0	-54.9	150.0	11
12	42	03.6	-52.9	147.6	41	12.8	-53.3	148.1	40	21.8	-53.6	148.5	39	30.5	-53.9	149.0	38	39.0	-54.2	149.4	37	47.2	-54.5	149.8	36	55.3	-54.8	150.2	36	03.1	-55.0	150.5	12
13	41	10.7	-53.1	148.2	40	19.5	-53.4	148.7	39	28.2	-53.8	149.1	38	36.6	-54.1	149.5	37	44.8	-54.4	149.9	36	52.7	-54.6	150.3	36	00.5	-54.8	150.7	35	08.1	-55.1	151.0	13
14	40	17.6	-53.4	148.8	39	26.1	-53.6	149.3	38	34.4	-53.9	149.7	37	42.5	-54.2	150.1	36	50.4	-54.5	150.5	35	58.1	-54.7	150.8	35	05.7	-55.0	151.2	34	13.0	-55.2	151.5	14
15	39	24.2	-53.4	149.4	38	32.5	-53.8	149.8	37	40.5	-54.1	150.2	36	48.3	-54.3	150.6	35	55.9	-54.6	151.0	35	03.4	-54.9	151.3	34	10.7	-55.1	151.6	33	17.8	-55.4	152.0	15
16	38	30.8	-53.7	150.0	37	38.7	-54.0	150.4	36	46.4	-54.2	150.8	35	54.0	-54.5	151.1	35	01.3	-54.7	151.5	34	08.5	-55.0	151.8	33	15.6	-55.3	152.1	32	22.4	-55.4	152.4	16
17	37	37.1	-53.8	150.6	36	44.7	-54.1	151.0	35	52.2	-54.4	151.3	34	59.5	-54.6	151.7	34	06.6	-54.9	152.0	33	13.5	-55.1	152.3	32	20.3	-55.3	152.6	31	27.0	-55.5	152.9	17
18	36	43.3	-54.0	151.1	35	50.6	-54.2	151.5	34	57.8	-54.5	151.8	34	04.9	-54.8	152.2	33	11.7	-54.9	152.5	32	18.4	-55.1	152.8	31	25.0	-55.4	153.0	30	31.5	-55.6	153.3	18
19	35	49.3	-54.1	151.7	34	56.4	-54.4	152.0	34	03.3	-54.6	152.3	33	10.1	-54.8	152.6	32	16.8	-55.1	152.9	31	23.3	-55.3	153.2	30	29.6	-55.5	153.5	29				
20	34	55.2	-54.3	152.2	34	02.0	-54.5	152.5	33	08.7	-54.7	152.8	32	15.3	-55.0	153.1	31	21.7	-55.2	153.4	30	28.0	-55.4	153.7	29	34.1	-55.6	153.9	28	40.2	-55.8	154.2	20
21	34	00.9	-54.3	152.7	33	07.5	-54.6	153.0	32	14.0	-54.8	153.3	31	20.3	-55.0	153.6	30	26.5	-55.3	153.9	29	32.6	-55.5	154.1	27	44.4	-55.9	154.4	26				
22	33	06.6	-54.5	153.2	32	12.9	-54.7	153.5	31	19.2	-55.0	153.8	30	25.3	-55.2	154.1	29	31.2	-55.3	154.3	28	37.1	-55.5	154.6	27	42.9	-55.8	154.8	26				
23	32	12.1	-54.6	153.7	31	18.2	-54.8	154.0	30	24.2	-55.0	154.3	29	30.1	-55.2	154.5	28	35.9	-55.5	154.8	27	41.6	-55.7	155.0	26	47.1	-55.8	155.2	25				
24	31	17.5	-54.8	154.2	30	23.4	-55.0	154.5	29	29.2	-55.2	154.7	28	34.9	-55.4	155.0	27	40.4	-55.5	155.2	26	45.9	-55.7	155.4	25	51.3	-55.8	155.6	24				
25	30	22.7	-54.8	154.7	29	28.4	-55.0	154.9	28	34.0	-55.2	155.2	27	39.5	-55.4	155.4	26	44.9	-55.6	155.6	25	50.2	-55.7	155.8	24	00.6	-56.1	156.0	25				
26	29	27.9	-54.9	155.2	28	33.4	-55.1	155.4	27	38.8	-55.3	155.6	26	44.1	-55.5	155.8	25	49.3	-55.6	156.0	24	35.9	-56.1	156.2	23	40.5	-56.2	156.6	26				
27	28	33.0	-55.0	155.6	27	38.3	-55.2	155.9	26	43.5	-55.4	156.1	25	48.6	-55.5	156.3	24	53.7	-55.8	156.5	23	58.6	-56.1	156.8	22	08.3	-56.2	157.0	27				
28	27	38.0	-55.1	156.1	26	43.1	-55.3	156.3	25	48.1	-55.4	156.5	24	54.1	-55.7	156.7	23	57.9	-56.8	156.9	22	07.4	-56.1	157.2	21	12.1	-56.3	157.3	28				
29	26	42.9	-56.2	156.5	25	47.8	-56.4	156.7	24	52.7	-56.6	157.0	23	57.4	-56.8	157.1	22	06.8	-56.0	157.4	21	11.3	-56.1	157.6	20	15.8	-56.3	157.7	29				
30	25	47.7	-55.2	157.0	24	52.5	-55.5	157.2	23	57.1	-55.6	157.3	22	01.7	-55.7	157.5	21	06.3	-55.9	157.7	20	15.2	-56.2	157.9	19	19.5	-56.3	158.1	30				
31	24	52.5	-55.4	157.4	23	57.0	-55.5	157.6	22	01.5	-55.6	157.7	21	04.0	-55.7	157.9	20	14.7	-56.1	158.2	19	19.0	-56.3	158.3	18	23.2	-56.4	158.4	31				
32	23	57.1	-55.4	157.8	22	01.5	-55.5	158.0	21	05.9	-55.7	158.1	20	14.4	-56.0	158.4	19	18.6	-56.2	158.6	18	22.7	-56.3	158.7	17	26.8	-56.4	158.8	32				
33	23	01.7	-55.4	158.2	22	06.0	-55.6	158.4	21	10.2	-55.8	158.5	20	14.3	-55.9	158.7	19	18.4	-56.1	158.8	18	22.4	-56.2	158.9	17	26.4	-56.3	159.0	33				
34	22	06.3	-55.5	158.7	21	10.4	-55.7	158.9	20	14.4	-56.0	160.1	19	18.6	-56.2	16																	

25°, 335° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180° Zn=Z
 { L.H.A. less than 180° Zn= 360° -Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z									
0	51	42.6	+48.2	137.0	50	58.4	+48.9	137.8	50	13.7	+49.5	138.7	49	28.3	+50.1	139.4	48	42.5	+50.7	140.2	47	56.2	+51.2	140.9	47	09.4	+51.7	141.6	46	22.2	+52.2	142.2	0
1	52	30.8	+47.7	136.0	51	47.3	+48.4	136.9	51	03.2	+49.0	137.8	50	18.4	+49.8	138.6	49	33.2	+50.3	139.4	48	47.4	+50.9	140.1	48	01.1	+51.4	140.8	47	14.4	+51.9	141.5	1
2	53	18.5	+47.1	135.0	52	35.7	+47.9	135.9	51	52.2	+48.7	136.8	51	08.2	+49.3	137.7	50	23.5	+49.9	138.5	49	38.3	+50.5	139.3	48	52.5	+51.1	140.0	48	06.3	+51.6	140.6	2
3	54	05.6	+46.6	134.0	53	23.6	+47.4	134.9	52	40.9	+48.1	135.9	51	57.5	+48.8	136.8	51	13.4	+49.6	137.6	50	28.8	+50.2	138.5	49	43.6	+50.8	139.2	48	57.9	+51.3	140.0	3
4	54	52.2	+46.0	132.9	54	11.0	+46.8	133.9	53	29.0	+47.0	134.9	52	46.3	+48.4	135.8	52	03.0	+49.0	136.7	51	19.0	+49.7	137.6	50	34.4	+50.4	138.4	49	49.2	+51.0	139.2	4
5	55	38.2	+45.4	131.8	54	57.8	+46.3	132.8	54	16.6	+47.1	133.9	53	34.7	+47.9	134.8	52	52.0	+48.7	135.8	52	08.7	+49.3	136.7	51	24.8	+49.9	137.5	50	40.2	+50.6	138.4	5
6	56	23.6	+44.6	130.6	55	44.1	+45.6	131.7	55	03.7	+46.5	132.8	54	22.6	+47.3	133.8	53	40.7	+48.1	134.8	52	58.0	+48.9	135.7	52	14.7	+49.6	136.6	51	30.8	+50.2	137.5	6
7	57	08.2	+43.9	129.4	56	29.7	+44.9	130.5	55	50.2	+45.9	131.7	55	09.9	+46.8	132.7	54	28.8	+47.6	133.8	53	46.9	+48.4	134.8	53	04.3	+49.1	135.7	52	21.0	+49.8	136.6	7
8	57	52.1	+43.2	128.1	57	14.6	+44.2	129.3	56	36.1	+45.2	130.5	55	56.7	+46.1	131.6	55	16.4	+47.0	132.7	54	35.3	+47.8	133.8	53	53.4	+48.6	134.8	53	10.8	+49.4	135.7	8
9	58	35.3	+42.3	126.8	57	58.8	+43.4	128.1	57	21.3	+44.5	129.3	56	42.8	+45.5	130.5	56	03.4	+46.4	131.6	55	23.1	+47.3	132.7	54	42.0	+48.1	133.8	54	00.2	+48.8	134.7	9
10	59	17.6	+41.3	125.4	58	42.2	+42.6	126.8	58	05.8	+43.7	128.0	57	28.3	+44.7	129.3	56	49.8	+45.7	130.5	56	10.4	+46.7	131.6	55	30.1	+47.6	132.7	54	49.0	+48.4	133.8	10
11	59	58.9	+40.4	124.0	59	24.8	+41.7	125.4	58	49.5	+42.8	126.7	58	13.0	+44.0	128.0	57	35.5	+45.1	129.3	56	57.1	+46.0	130.5	56	17.7	+46.9	131.6	55	37.4	+47.8	132.7	11
12	60	39.3	+39.4	122.5	60	06.5	+40.7	124.0	59	32.3	+42.0	125.4	58	57.0	+43.2	126.7	58	20.6	+44.3	128.0	57	43.1	+45.3	129.3	57	04.6	+46.3	130.5	56	25.2	+47.2	131.6	12
13	61	18.7	+38.3	120.9	60	47.2	+39.7	122.5	60	14.3	+41.0	123.9	59	40.2	+42.3	125.4	59	04.9	+43.4	126.7	58	28.4	+44.6	128.0	57	50.9	+45.7	129.3	57	12.4	+46.6	130.5	13
14	61	57.0	+37.0	119.3	61	26.9	+38.5	120.9	60	55.3	+40.0	122.5	60	22.5	+41.3	123.9	59	48.3	+42.6	125.4	59	13.0	+43.8	126.8	58	36.6	+44.9	128.1	57	59.0	+46.0	129.3	14
15	62	34.0	+35.8	117.6	62	05.4	+37.4	119.3	61	35.3	+38.9	120.9	61	03.8	+40.3	122.5	60	30.9	+41.7	124.0	59	56.8	+42.9	125.4	59	21.5	+44.0	126.8	58	45.0	+45.2	128.1	15
16	63	09.8	+34.4	115.9	62	42.8	+36.1	117.6	62	14.2	+37.4	119.3	61	44.1	+39.3	120.9	61	12.6	+40.7	122.5	60	39.7	+42.0	124.0	60	05.5	+43.3	125.4	59	30.2	+44.4	126.8	16
17	63	44.2	+33.0	114.0	63	18.9	+34.8	115.8	62	52.0	+36.4	117.6	62	23.4	+38.0	119.3	61	53.3	+39.5	120.9	61	21.7	+41.0	122.5	60	48.8	+42.3	124.0	60	14.6	+43.5	125.5	17
18	64	17.2	+31.5	112.1	63	53.7	+33.3	114.0	63	28.4	+35.1	115.8	63	01.4	+36.8	117.6	62	32.8	+38.4	119.3	62	02.7	+39.9	121.0	61	31.1	+41.3	122.6	60	58.1	+42.7	124.1	18
19	64	48.7	+29.7	110.1	64	27.0	+31.8	112.1	64	03.5	+33.7	114.0	63	38.2	+35.5	115.9	63	11.2	+37.2	117.6	62	42.6	+38.7	119.4	62	12.4	+40.3	121.0	61	40.8	+41.6	122.6	19
20	65	18.4	+28.1	108.1	64	58.8	+30.1	110.1	64	37.2	+32.1	112.1	64	13.7	+34.0	114.0	63	48.4	+35.8	115.9	63	21.3	+37.5	117.7	62	52.7	+39.1	119.4	62	22.4	+40.6	121.1	20
21	65	46.5	+26.2	105.9	65	28.9	+28.4	108.1	65	09.3	+30.5	110.1	64	47.7	+32.5	112.1	64	24.2	+34.3	114.0	63	58.8	+36.2	115.9	63	31.8	+37.8	117.7	63	03.0	+39.5	119.5	21
22	66	12.7	+24.2	103.7	65	57.3	+26.5	105.9	65	39.8	+28.7	108.0	65	20.2	+30.8	110.1	64	58.5	+32.9	112.1	65	35.0	+34.7	114.1	64	09.6	+36.5	116.0	63	42.5	+38.2	117.8	22
23	66	36.9	+22.2	101.4	66	23.8	+24.6	103.7	66	08.5	+26.9	105.9	65	51.0	+29.1	108.0	66	02.6	+29.4	108.0	65	42.5	+31.9	112.2	64	57.6	+35.5	114.2	64	21.2	+33.6	112.2	24
24	66	59.1	+20.0	99.1	66	48.4	+22.5	101.4	66	35.4	+24.9	103.7	66	20.1	+27.2	105.9	65	42.6	+31.9	108.0	65	42.5	+31.9	112.2	64	57.6	+35.5	114.2	64	21.2	+33.6	112.2	24
25	67	19.1	+17.7	96.7	67	10.9	+20.3	99.0	67	0.3	+22.8	101.3	66	47.3	+25.2	103.6	66	32.0	+27.6	105.9	66	14.5	+29.8	108.1	65	54.8	+31.9	110.2	65	33.1	+33.9	112.3	25
26	67	36.8	+15.4	94.2	67	31.2	+18.0	96.6	67	23.1	+20.6	99.0	67	12.5	+23.2	101.3	66	59.6	+25.5	103.6	66	44.3	+27.3	105.9	66	26.7	+30.2	108.1	66	07.0	+32.3	110.2	26
27	67	52.2	+13.0	91.6	67	49.2	+15.7	94.1	67	43.7	+18.4	96.5	67	35.7	+20.9	98.9	67	25.1	+25.3	101.3	66	62.2	+25.9	103.6	66	39.3	+30.6	108.1	67	27.7	+30.8	108.1	27
28	68	05.2	+10.5	89.0	68	04.9	+13.9	91.5	68	0.2	+15.9	94.0	67	56.6	+18.7	96.4	68	48.6	+21.3	98.9	68	38.1	+23.9	101.3	67	25.2	+26.3	103.6	67	38.5	+26.7	103.7	28
29	68	15.7	+7.9	86.4	68	18.2	+10.7	88.9	68	18.0	+13.5	91.4	68	15.3	+16.2	93.9	68	09.9	+19.0	96.4	68	02.0	+21.6	98.8	67	51.5	+24.1	101.3	67	38.5	+26.7	103.7	29
30	68	23.6	+5.3	83.7	68	28.9	+8.1	86.2	68	31.5	+11.0	88.7	68	31.5	+13.8	91.3	68	28.9	+16.5	93.8	68	23.6	+19.2	96.3	68	15.6	+22.0	98.8	68	05.2	+24.5	101.3	30
31	68	28.9	+2.6	81.0	68	37.0	+5.5	83.5	68	42.5	+8.3	86.0	68	45.3	+11.2	88.6	68	45.4	+14.0	91.2	68	42.8	+16.8	93.7	68	37.6	+19.6	96.3	68	29.7	+22.8	98.8	31
32	68	31.5	0.0	78.2	68	42.5	+2.8	80.7	68	50.8	+5.7	83.3	68	56.5	+8.5	85.9	68	59.4	+11.4	88.5	68	59.6	+14.3	91.1	68	57.2	+17.1	93.7	68	51.9	+19.9	96.3	32
33	68	31.5	-2.6	75.5	68	45.3	+0.1	78.0	68	56.5	+2.9	80.5	69	0.5	+5.8	83.1	69	10.8	+8.8	85.7	69	25.6	+8.9	85.6	69	28.8	+11.9	88.2	69	29.3	+14.8	90.9	33
34	68	23.6	-8.0	70.1	68	42.8	-5.2	72.5	68	59.6	-2.4	75.0	69	13.9	+0.4	77.5	69	25.6	+3.2	80.1	69	40.7	+3.4	77.3	69	40.7	+3.4	77.3	69	40.7	+12.1	88.1	34
35	68	15.6	-10.4	67.4	68	37.6	-7.9	69.7	68	57.2	-5.3	72.2	69	14.3	-2.5	74.7	69	28.8	+0.5	77.3	69	40.7	+3.4	77.3	69	49.8	+6.4	82.6	69	56.2	+9.3	85.3	35
36	67	05.2	-13.0	64.7	67	29.7	-10.5	67.0	67	51.9	-7.8	69.4	69	11.8	-5.1	71.9	69	29.3	-2.4	74.4	69	44.1	+0.5	77.0	69	56.2	+3.5	79.7	70	0.5	-7.7	67.7	42
37	67	52.2	-15.4	62.1	68	19.2	-13.0	64.4	68	44.1	-10.5	66.7	69	0.6	-7.9	69.1	68	26.9	-5.1	71.6	69	44.6	-2.3	74.1	69	59.7	+0.6	76.8	70	12.0	+3.7	79.5	38
38	67	36.8	-24.2	53.3	67																												

25°, 335° L.H.A.

LATITUDE SAME NAME AS DECLINATION

LATITUDE CONTRARY NAME TO DECLINATION **L.H.A. 25°, 335°**

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	51	42.6	-48.6	137.0	50	58.4	-49.3	137.8	50	13.7	-49.9	138.7	49	28.3	-50.4	139.4	48	42.5	-51.0	140.2	47	56.2	-51.5	140.9	47	09.4	-52.0	141.6	46	22.2	-52.5	142.2	0
1	50	54.0	-49.1	137.9	50	09.1	-49.6	138.7	49	23.8	-50.3	139.5	48	37.9	-50.8	140.3	47	51.5	-51.3	141.0	47	04.7	-51.8	141.6	46	17.4	-52.3	142.3	45	29.7	-52.7	142.9	1
2	50	04.9	-49.5	138.8	49	19.5	-50.1	139.6	48	33.5	-50.6	140.3	47	47.1	-51.2	141.1	47	00.2	-51.6	141.7	46	12.9	-52.1	142.4	45	25.1	-52.5	143.0	44	37.0	-52.9	143.6	2
3	49	15.4	-49.9	139.7	48	29.4	-50.4	140.4	47	42.9	-50.9	141.2	46	55.9	-51.4	141.8	46	08.6	-51.9	142.5	45	20.8	-52.4	143.1	44	32.6	-52.7	143.7	43	44.1	-53.2	144.3	3
4	48	25.5	-50.2	140.6	47	39.0	-50.8	141.3	46	52.0	-51.3	141.9	46	04.5	-51.7	142.6	45	16.7	-52.2	143.2	44	28.4	-52.5	143.8	43	39.9	-53.0	144.4	42	50.9	-53.3	144.9	4
5	47	35.3	-50.5	141.4	46	48.2	-51.0	142.0	46	00.7	-51.5	142.7	45	12.8	-52.0	143.3	44	24.5	-52.4	143.9	43	35.9	-52.9	144.5	42	46.9	-53.2	145.0	41	57.6	-53.6	145.5	5
6	46	44.8	-50.9	142.2	45	57.2	-51.4	142.8	45	09.2	-51.8	143.4	44	20.8	-52.2	144.0	43	32.1	-52.7	144.6	42	43.0	-53.0	145.1	41	53.7	-53.4	145.6	41	04.0	-53.7	146.1	6
7	45	53.9	-51.2	142.9	45	05.8	-51.6	143.5	44	17.4	-52.1	144.1	43	28.6	-52.5	144.7	42	39.4	-52.8	145.2	41	50.0	-53.2	145.7	41	00.3	-53.6	146.2	40	10.3	-54.0	146.7	7
8	45	02.7	-51.5	143.7	44	14.2	-51.9	144.3	43	25.3	-52.3	144.8	42	36.1	-52.7	145.4	41	46.6	-53.1	145.9	40	56.8	-53.4	146.4	40	06.7	-53.8	146.8	39	16.3	-54.0	147.3	8
9	44	11.2	-51.7	144.4	43	22.3	-52.2	145.0	42	33.0	-52.5	145.5	41	43.4	-52.9	146.0	40	53.5	-53.2	146.5	40	03.4	-53.6	147.0	39	12.9	-53.3	147.4	38	22.3	-54.3	147.8	9
10	43	19.5	-52.0	145.1	42	30.1	-52.3	145.6	41	40.5	-52.8	146.1	40	50.5	-53.1	146.6	40	00.3	-53.5	147.1	39	09.8	-53.8	147.5	38	19.0	-54.1	148.0	37	28.0	-54.3	148.4	10
11	42	27.5	-52.2	145.8	41	37.8	-52.6	146.3	40	47.7	-52.9	146.8	39	57.4	-53.3	147.2	39	06.8	-53.6	147.7	38	16.0	-53.9	148.1	37	24.9	-54.2	148.5	36	33.7	-54.5	148.9	11
12	41	35.3	-52.4	146.4	40	45.2	-52.8	146.9	39	54.8	-53.2	147.4	39	04.1	-53.5	147.8	38	13.2	-53.8	148.3	37	22.1	-54.1	148.7	36	30.7	-54.4	149.0	35	39.2	-54.7	149.4	12
13	40	42.9	-52.7	147.1	39	52.4	-53.0	147.6	39	01.6	-53.3	148.0	38	10.6	-53.6	148.4	37	19.4	-53.9	148.8	36	28.0	-54.3	149.2	35	36.3	-54.5	149.6	34	44.5	-54.8	149.9	13
14	39	50.2	-52.8	147.7	38	59.4	-53.2	148.2	38	08.3	-53.5	148.6	37	17.0	-53.8	149.0	36	25.5	-54.1	149.4	35	33.7	-54.3	149.7	34	41.8	-54.6	150.1	33	49.7	-54.8	150.4	14
15	38	57.4	-53.0	148.3	38	06.2	-53.3	148.8	37	14.8	-53.6	149.1	36	23.2	-53.9	149.5	35	31.4	-54.2	149.9	34	39.4	-54.5	150.2	33	47.2	-54.7	150.6	32	54.9	-55.0	150.9	15
16	38	04.4	-53.2	148.9	37	12.9	-53.5	149.3	36	21.2	-53.8	149.7	35	29.3	-54.1	150.1	34	37.2	-54.4	150.4	33	44.9	-54.6	150.8	32	52.5	-54.9	151.1	31	59.9	-55.1	151.4	16
17	37	11.2	-53.4	149.5	36	19.4	-53.7	149.9	35	27.4	-54.0	150.3	34	35.2	-54.3	150.6	33	42.8	-54.5	150.9	32	50.3	-54.7	151.2	31	57.6	-55.0	151.6	31	04.8	-55.2	151.8	17
18	36	17.8	-53.6	150.1	35	25.7	-53.8	150.4	34	33.4	-54.1	150.8	33	40.9	-54.3	151.1	32	48.3	-54.6	151.4	31	55.6	-54.9	151.7	30	09.6	-55.3	152.0	29	16.3	-55.5	152.3	18
19	35	24.2	-53.6	150.6	34	31.9	-54.0	151.0	33	39.3	-54.2	151.3	32	46.6	-54.5	151.6	31	53.7	-54.7	151.9	30	07.4	-55.0	152.2	29	14.3	-55.4	152.7	19				
20	34	30.6	-53.9	151.2	33	37.9	-54.1	151.5	32	45.1	-54.3	151.8	31	52.1	-54.5	152.1	30	59.0	-54.8	152.4	29	05.8	-55.0	152.7	28	12.4	-55.2	152.9	28	18.9	-55.4	153.2	20
21	33	36.7	-53.9	151.7	32	43.8	-54.2	152.0	31	50.8	-54.5	152.3	30	57.6	-54.7	152.6	29	10.8	-55.2	153.1	28	17.2	-55.4	153.4	27	23.5	-55.6	153.6	21				
22	32	42.8	-54.1	152.2	31	49.6	-54.3	152.5	30	56.3	-54.6	152.8	30	02.9	-54.8	153.1	29	09.3	-55.0	153.3	28	16.5	-55.2	153.6	27	21.8	-55.4	153.8	26	27.9	-55.6	154.0	22
23	31	48.7	-54.2	152.8	30	55.3	-54.5	153.0	30	01.7	-54.6	153.3	29	08.1	-54.9	153.6	28	14.3	-55.1	153.8	27	20.4	-55.3	154.0	26	26.4	-55.5	154.2	23				
24	30	54.5	-54.3	153.3	30	00.8	-54.5	153.5	29	07.1	-54.8	153.8	28	13.2	-55.0	154.0	27	19.2	-55.2	154.2	26	25.1	-55.4	154.5	25	30.9	-55.5	154.7	24				
25	30	00.2	-54.5	153.8	29	06.3	-54.7	154.0	28	12.3	-54.9	154.2	27	18.2	-55.1	154.5	26	24.0	-55.2	154.7	25	29.7	-55.4	155.1	23	40.9	-55.8	155.3	25				
26	29	05.7	-54.5	154.2	28	11.6	-54.7	154.5	27	17.4	-54.9	154.7	26	23.1	-55.1	154.9	25	28.8	-55.4	155.1	24	34.3	-55.5	155.3	23	39.7	-55.7	155.5	22				
27	28	11.2	-54.6	154.7	27	16.9	-54.8	154.9	26	22.5	-55.0	155.1	25	28.0	-55.2	155.3	24	33.4	-55.4	155.5	23	38.8	-55.6	155.7	22	44.0	-55.7	155.9	27				
28	27	16.6	-54.8	155.2	26	22.1	-55.0	155.4	25	27.5	-55.1	155.6	24	32.8	-55.3	155.8	23	38.0	-55.5	156.0	22	43.2	-55.7	156.1	21	49.2	-55.9	156.3	28				
29	26	21.8	-54.8	155.6	25	27.1	-55.0	155.8	24	32.4	-55.2	156.0	23	37.5	-55.4	156.2	22	42.6	-55.6	156.4	21	47.5	-55.7	156.6	20	52.5	-56.0	156.8	29				
30	25	27.0	-54.9	156.1	24	32.1	-55.0	156.3	23	37.2	-55.3	156.5	22	42.1	-55.4	156.6	21	47.0	-55.6	156.8	20	51.8	-55.7	157.1	19	01.3	-56.1	157.2	30				
31	24	32.1	-54.9	156.5	23	37.1	-55.2	156.7	22	41.9	-55.3	156.9	21	46.7	-55.5	157.0	20	51.4	-55.6	157.2	19	00.7	-56.1	157.5	18	05.2	-56.1	157.6	31				
32	23	37.2	-55.1	157.0	22	41.9	-55.2	157.1	21	46.6	-55.4	157.3	20	51.2	-55.5	157.4	19	00.3	-55.9	157.7	18	04.7	-56.0	157.9	17	09.1	-56.1	158.0	32				
33	22	42.1	-55.1	157.4	21	46.7	-55.3	157.6	20	51.2	-55.4	157.7	19	55.7	-55.6	157.9	18	00.1	-55.8	158.0	17	08.7	-56.0	158.2	16	13.0	-56.2	158.3	33				
34	21	47.0	-55.2	157.8	20	51.4	-55.5	158.1	19	55.8	-55.7	15																					

26°, 334° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z																						
0	51 06.7	+47.6	135.7	50 23.5	+48.2	136.6	49 39.6	+48.9	137.4	48 55.2	+49.5	138.2	48 10.2	+50.2	138.9	47 24.8	+50.7	139.6	46 38.8	+51.3	140.3	45 52.4	+51.8	141.0	0
1	51 54.3	+47.0	134.7	51 11.7	+47.8	135.6	50 28.5	+48.5	136.5	49 44.7	+49.2	137.3	49 00.4	+49.7	138.1	48 15.5	+50.3	138.8	47 30.1	+50.9	139.6	46 44.2	+51.4	140.2	1
2	52 41.3	+46.5	133.7	51 59.5	+47.3	134.6	51 17.0	+48.0	135.5	50 33.9	+48.7	136.4	49 50.1	+49.4	137.2	49 05.8	+50.0	138.0	48 21.0	+50.5	138.8	47 35.6	+51.1	139.5	2
3	53 27.8	+45.8	132.7	52 46.8	+46.7	133.6	52 05.0	+47.5	134.6	51 22.6	+48.2	135.5	50 39.5	+48.9	136.3	49 55.8	+49.6	137.2	49 11.5	+50.2	137.9	48 26.7	+50.8	138.7	3
4	54 13.7	+45.4	131.6	53 33.5	+46.2	132.6	52 52.5	+47.0	133.6	52 10.8	+47.8	134.5	51 28.4	+48.5	135.4	50 45.4	+49.2	136.3	50 01.7	+49.9	137.1	49 17.5	+50.5	137.9	4
5	54 59.1	+44.6	130.4	54 19.7	+45.6	131.5	53 39.5	+46.5	132.5	52 58.6	+47.3	133.5	52 16.9	+48.1	134.5	51 34.6	+48.7	135.4	50 51.6	+49.4	136.2	50 08.0	+50.0	137.1	5
6	55 43.7	+44.0	129.3	55 05.3	+44.9	130.4	54 26.0	+45.8	131.4	53 45.9	+46.7	132.5	53 00.5	+47.5	133.5	52 23.3	+48.3	134.4	51 41.0	+49.0	135.3	50 58.0	+49.7	136.2	6
7	56 27.7	+43.2	128.0	55 50.2	+44.2	129.2	55 11.8	+45.2	130.3	54 32.6	+46.1	131.4	53 52.5	+46.9	132.4	53 11.6	+47.8	133.4	52 30.0	+48.5	134.4	51 47.7	+49.2	135.3	7
8	57 10.9	+42.4	126.8	56 34.4	+43.5	128.0	55 57.0	+44.5	129.2	55 18.7	+45.4	130.3	54 39.4	+46.4	131.4	53 59.4	+47.2	132.4	53 18.5	+48.1	133.4	52 36.9	+48.8	134.4	8
9	57 53.3	+41.6	125.5	57 17.9	+42.7	126.7	56 41.5	+43.8	128.0	56 04.1	+44.9	129.1	55 25.8	+45.8	130.3	54 46.6	+46.7	131.3	54 06.6	+47.5	132.4	53 25.7	+48.3	133.4	9
10	58 34.9	+40.6	124.1	58 00.6	+41.9	125.4	57 25.3	+43.0	126.7	56 49.0	+44.0	127.9	56 11.6	+45.1	129.1	55 33.3	+46.1	130.2	54 54.1	+46.9	131.3	54 14.0	+47.8	132.4	10
11	59 15.5	+39.7	122.7	58 42.5	+41.0	124.1	58 08.3	+42.2	125.4	57 33.0	+43.3	126.7	56 56.7	+44.3	127.9	56 19.3	+45.4	129.1	55 41.0	+46.3	130.2	55 01.8	+47.2	131.3	11
12	59 55.2	+38.6	121.2	59 23.5	+40.0	122.6	58 50.5	+41.3	124.0	58 16.3	+42.5	125.4	57 41.0	+43.7	126.7	57 04.7	+44.7	127.9	56 27.3	+45.7	129.1	55 49.0	+46.6	130.3	12
13	60 33.8	+37.6	119.6	60 03.5	+38.9	121.2	59 31.8	+40.3	122.6	58 58.8	+41.6	124.0	58 24.7	+42.7	125.4	57 49.4	+43.4	126.7	57 13.0	+45.0	127.9	56 35.6	+46.0	129.1	13
14	61 11.4	+36.3	118.0	60 42.4	+37.9	119.6	60 12.1	+39.3	121.1	59 40.4	+40.6	122.6	59 07.4	+42.0	124.0	58 33.3	+43.1	125.4	57 58.0	+44.2	126.7	57 21.6	+45.3	127.9	14
15	61 47.7	+35.1	116.4	61 20.3	+36.7	118.0	60 51.4	+38.2	119.6	60 21.0	+39.7	121.1	59 49.4	+40.9	122.6	59 16.4	+42.2	124.0	58 42.2	+43.5	125.4	58 06.9	+44.6	126.7	15
16	62 22.8	+33.4	114.6	61 57.0	+35.4	116.3	61 29.6	+37.0	118.0	61 00.7	+38.5	119.6	60 30.3	+40.0	121.1	59 58.6	+41.3	122.6	59 25.7	+42.5	124.1	58 51.5	+43.7	125.4	16
17	62 56.6	+32.3	112.8	62 32.4	+34.1	114.6	62 06.6	+35.8	116.3	61 39.2	+37.4	118.0	61 10.3	+38.9	119.6	60 39.9	+40.3	121.2	60 08.2	+41.7	122.7	59 35.2	+42.9	124.1	17
18	63 28.9	+30.8	111.0	63 06.5	+32.7	112.8	62 42.4	+34.4	114.6	62 16.6	+36.1	116.3	61 49.2	+37.7	118.0	61 20.2	+39.3	119.6	60 49.9	+40.6	121.2	60 18.1	+42.0	122.7	18
19	63 59.7	+29.2	109.0	63 39.2	+31.1	110.9	63 16.8	+33.1	112.8	62 52.7	+34.8	114.6	62 26.9	+36.5	116.4	61 59.5	+38.0	118.0	61 30.5	+39.6	119.7	61 00.1	+41.0	121.2	19
20	64 28.9	+27.5	107.0	64 10.3	+29.6	109.0	63 49.9	+31.5	110.9	63 27.5	+33.4	112.8	63 03.4	+35.1	114.6	62 37.5	+36.9	116.4	62 10.1	+38.4	118.1	61 41.1	+39.9	119.7	20
21	64 56.4	+25.7	104.9	64 39.9	+27.8	107.0	64 21.4	+29.9	109.0	64 00.9	+31.8	110.9	63 38.5	+33.8	112.8	63 14.4	+35.5	114.6	62 48.5	+37.2	116.4	62 21.0	+38.8	118.1	21
22	65 22.1	+23.8	102.8	65 07.7	+26.1	104.9	64 51.3	+28.1	107.0	64 32.7	+30.3	109.0	64 12.3	+32.2	110.9	63 49.9	+34.1	112.8	63 25.7	+35.9	114.7	62 59.8	+37.6	116.5	22
23	65 45.9	+21.8	*100.6	65 33.8	+24.1	*102.7	65 19.4	+26.4	104.9	65 03.0	+28.5	106.9	64 44.5	+30.6	109.0	64 24.0	+32.6	110.9	64 01.6	+34.5	112.9	63 37.4	+36.3	114.7	23
24	66 07.7	+19.7	98.3	65 57.9	+22.1	*100.5	65 45.8	+24.5	102.7	65 31.5	+26.8	104.8	65 15.1	+28.9	106.9	64 56.6	+31.0	109.0	64 36.1	+33.0	111.0	64 13.7	+34.8	112.9	24
25	66 27.4	+17.6	95.9	66 20.0	+20.1	98.2	66 10.3	+22.5	*100.4	65 58.3	+24.8	*102.7	65 44.0	+27.1	104.8	65 27.6	+29.3	106.9	65 09.1	+31.3	109.0	64 48.5	+33.4	111.0	25
26	66 45.0	+15.3	93.5	66 40.1	+17.8	95.8	66 32.8	+20.3	98.1	66 23.1	+22.8	*100.4	66 11.1	+25.2	*102.6	65 56.9	+27.4	104.8	65 40.4	+29.7	107.0	65 21.9	+31.7	109.1	26
27	67 00.3	+12.9	91.1	66 57.9	+15.6	93.4	66 53.1	+18.2	95.8	66 45.9	+20.7	98.1	66 36.3	+23.1	*100.4	66 24.3	+25.5	102.6	66 10.1	+27.8	104.8	65 53.6	+30.1	107.0	27
28	67 13.2	+10.6	88.6	67 13.5	+13.2	90.9	67 11.3	+15.9	93.3	67 06.6	+18.5	95.7	66 59.4	+21.0	98.0	66 49.8	+23.5	*100.3	66 37.9	+25.9	*102.6	66 23.7	+28.1	104.9	28
29	67 23.8	+8.1	86.0	67 26.7	+10.9	88.4	67 27.2	+13.5	90.8	67 25.1	+16.1	93.2	67 20.4	+18.8	95.6	67 13.3	+21.4	*98.0	67 03.8	+23.8	*100.3	66 51.8	+26.3	102.6	29
30	67 31.9	+5.7	83.4	67 37.6	+8.3	85.8	67 40.7	+11.0	88.3	67 41.2	+13.8	90.7	67 39.2	+16.5	93.1	67 34.7	+19.1	95.5	67 27.6	+21.7	97.9	67 18.1	+24.2	*100.3	30
31	67 37.6	+3.1	80.8	67 45.9	+5.8	83.2	67 51.7	+8.6	85.7	67 55.0	+11.3	88.1	67 55.7	+16.7	90.6	67 53.8	+16.7	93.0	67 49.3	+19.4	95.5	67 42.3	+22.0	97.9	31
32	67 40.7	+0.5	78.2	67 51.7	+3.3	80.6	68 00.3	+6.0	83.0	68 06.3	+8.8	85.5	68 09.7	+11.5	88.0	68 10.5	+14.3	90.5	68 08.7	+17.0	93.0	68 04.3	+19.7	95.5	32
33	67 41.2	-2.0	75.5	67 55.0	+0.7	77.9	68 06.3	+3.4	80.4	68 15.1	+6.1	82.8	68 21.2	+9.0	85.3	68 24.8	+11.8	87.9	68 25.7	+14.6	90.4	68 24.0	+17.3	92.9	33
34	67 39.2	-4.5	72.9	67 55.7	-1.9	75.3	68 09.7	+0.8	77.7	68 21.2	+2.5	80.1	68 30.2	+3.6	82.6	68 36.6	+9.2	85.2	68 40.3	+12.0	87.7	68 41.3	+14.9	90.3	34
35	67 34.7	-7.1	70.3	67 53.8	-4.5	72.6	68 10.5	-1.8	75.0	68 24.8	+0.9	77.4	68 36.6	+3.7	80.9	68 45.8	+6.5	82.5	68 52.3	+9.4	85.0	68 56.2	+12.2	87.6	35
36	67 27.6	-9.5	67.7	67 49.3	-7.0	70.0	68 08.7	-4.4	72.3	68 25.7	-1.7	74.7	68 40.3	+1.0	77.2	68 52.3	+3.9	79.7	69 01.7	+6.7	82.3	69 08.4	+9.6		

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 26° , 334°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z																						
0	51 06.7	-48.0	135.7	50 23.5	-48.7	136.6	49 39.6	-49.3	137.4	48 55.2	-49.9	138.2	48 10.2	-50.4	138.9	47 24.8	-51.0	139.6	46 38.8	-51.5	140.3	45 52.4	-52.0	141.0	0
1	50 18.7	-48.4	136.7	49 34.8	-49.1	137.5	48 50.3	-49.7	138.2	48 05.3	-50.3	139.0	47 19.8	-50.8	139.7	46 33.8	-51.4	140.4	45 47.3	-51.8	141.1	45 00.4	-52.2	141.7	1
2	49 30.3	-48.9	137.6	48 45.7	-49.5	138.3	48 00.6	-50.1	139.1	47 15.0	-50.6	139.8	46 29.0	-51.2	140.5	45 42.4	-51.6	141.1	44 55.5	-52.0	141.8	44 08.2	-52.5	142.4	2
3	48 41.4	-49.3	138.5	47 56.2	-49.9	139.2	47 10.5	-50.4	139.9	46 24.4	-50.9	140.6	45 37.8	-51.4	141.2	44 50.8	-51.8	141.9	44 03.5	-52.4	142.5	43 15.7	-52.7	143.0	3
4	47 52.1	-49.7	139.3	47 06.4	-50.2	140.0	46 20.1	-50.7	140.7	45 33.5	-51.2	141.4	44 46.4	-51.6	142.0	43 59.0	-52.1	142.6	43 11.1	-52.5	143.1	42 23.0	-53.0	143.7	4
5	47 02.4	-50.0	140.1	46 16.2	-50.6	140.8	45 29.4	-51.0	141.5	44 42.3	-51.5	142.1	43 54.8	-52.0	142.7	43 06.9	-52.4	143.3	42 18.6	-52.7	143.8	41 30.0	-53.1	144.3	5
6	46 12.4	-50.3	141.0	45 25.6	-50.8	141.6	44 38.4	-51.3	142.2	43 50.8	-51.7	142.8	43 02.8	-52.1	143.4	42 14.5	-52.6	143.9	41 25.9	-53.0	144.4	40 36.9	-53.3	144.9	6
7	45 22.1	-50.6	141.7	44 34.8	-51.1	142.3	43 47.1	-51.5	142.9	42 59.1	-52.0	143.5	42 10.7	-52.4	144.0	41 21.9	-52.8	144.6	40 32.9	-53.2	145.1	39 43.6	-53.6	145.5	7
8	44 31.5	-50.9	142.5	43 43.7	-51.4	143.1	42 55.6	-51.9	143.6	42 07.1	-52.3	144.2	41 18.3	-52.7	144.7	40 29.1	-53.0	145.2	39 39.7	-53.3	145.7	38 50.0	-53.6	146.1	8
9	43 40.6	-51.3	143.2	42 52.3	-51.6	143.8	42 03.7	-52.0	144.3	41 14.8	-52.4	144.8	40 25.6	-52.8	145.3	39 36.1	-53.1	145.8	38 46.4	-53.5	146.3	37 56.4	-53.9	146.7	9
10	42 49.3	-51.4	143.9	42 00.7	-51.9	144.5	41 11.7	-52.3	145.0	40 22.4	-52.7	145.5	39 32.8	-53.0	146.0	38 43.0	-53.4	146.4	37 52.9	-53.7	146.8	37 02.5	-54.0	147.3	10
11	41 57.9	-51.7	144.6	41 08.8	-52.1	145.1	40 19.4	-52.5	145.6	39 29.7	-52.8	146.1	38 39.8	-53.2	146.6	37 49.6	-53.5	147.0	36 59.2	-53.9	147.4	36 08.5	-54.1	147.8	11
12	41 06.2	-52.0	145.3	40 16.7	-52.3	145.8	39 26.9	-52.7	146.3	38 36.9	-53.0	146.7	37 46.6	-53.4	147.1	36 56.1	-53.7	147.6	36 05.3	-53.9	148.0	35 14.4	-54.3	148.3	12
13	40 14.2	-52.1	146.0	39 24.4	-52.6	146.4	38 34.2	-52.8	146.9	37 43.9	-53.2	147.3	36 53.2	-53.5	147.7	36 02.4	-53.8	148.1	35 11.4	-54.2	148.5	34 20.1	-54.4	148.9	13
14	39 22.1	-52.4	146.6	38 31.8	-52.7	147.1	37 41.4	-53.1	147.5	36 50.7	-53.4	147.9	35 59.7	-53.7	148.3	35 08.6	-54.0	148.7	34 17.2	-54.2	149.0	33 25.7	-54.5	149.4	14
15	38 29.7	-52.6	147.2	37 39.1	-52.9	147.7	36 48.3	-53.2	148.1	35 57.3	-53.6	148.5	35 06.0	-53.8	148.8	34 14.6	-54.1	149.2	33 23.0	-54.4	149.5	32 31.2	-54.7	149.9	15
16	37 37.1	-52.7	147.9	36 46.2	-53.1	148.3	35 55.1	-53.4	148.6	35 03.7	-53.6	149.0	34 12.2	-54.0	149.4	33 20.5	-54.2	149.7	32 28.6	-54.5	150.0	31 36.5	-54.7	150.3	16
17	36 44.4	-52.9	148.5	35 53.1	-53.2	148.8	35 01.7	-53.5	149.2	34 10.1	-53.9	149.6	33 18.2	-54.0	149.9	32 26.3	-54.4	150.2	31 34.1	-54.6	150.5	30 41.8	-54.9	150.8	17
18	35 51.5	-53.1	149.0	34 59.9	-53.4	149.4	34 08.2	-53.7	149.8	33 16.2	-53.9	150.1	32 24.2	-54.3	150.4	31 31.9	-54.5	150.7	30 39.5	-54.7	151.0	29 46.9	-54.9	151.3	18
19	34 58.4	-53.3	149.6	34 06.5	-53.5	150.0	33 14.5	-53.8	150.3	32 22.3	-54.1	150.6	31 29.9	-54.3	150.9	30 37.4	-54.6	151.2	29 44.8	-54.8	151.5	28 52.0	-55.1	151.8	19
20	34 05.1	-53.4	150.2	33 13.0	-53.7	150.5	32 20.7	-54.0	150.8	31 28.2	-54.2	151.1	30 35.6	-54.4	151.4	29 42.8	-54.6	151.7	28 50.0	-54.9	152.0	27 56.9	-55.1	152.2	20
21	33 11.7	-53.5	150.7	32 19.3	-53.8	151.0	31 26.7	-54.0	151.3	30 34.0	-54.3	151.6	29 41.2	-54.6	151.9	28 48.2	-54.8	152.2	27 55.1	-55.0	152.4	27 01.8	-55.2	152.6	21
22	32 18.2	-53.7	151.3	31 25.5	-53.9	151.6	30 32.7	-54.2	151.8	29 39.7	-54.4	152.1	28 46.6	-54.6	152.4	27 53.4	-54.9	152.6	27 00.1	-55.1	152.9	26 06.6	-55.3	153.1	22
23	31 24.5	-53.8	151.8	30 31.6	-54.1	152.1	29 38.5	-54.3	152.3	28 45.3	-54.5	152.6	27 52.0	-54.8	152.8	26 58.5	-54.9	153.1	26 05.0	-55.2	153.3	25 11.3	-55.3	153.5	23
24	30 30.7	-53.9	152.3	29 37.5	-54.1	152.6	28 44.2	-54.4	152.8	27 50.8	-54.6	153.1	26 57.2	-54.8	153.3	26 03.6	-55.1	153.5	25 09.8	-55.2	153.7	24 16.0	-55.5	153.9	24
25	29 36.8	-54.0	152.8	28 43.4	-54.3	153.1	27 49.8	-54.5	153.3	26 56.2	-54.8	153.5	26 02.4	-54.9	153.8	25 08.5	-55.1	154.0	24 14.6	-55.3	154.2	23 20.5	-55.5	154.4	25
26	28 42.8	-54.2	153.3	27 49.1	-54.4	153.5	26 55.3	-54.6	153.8	26 01.4	-54.7	154.0	25 07.5	-55.0	154.2	24 13.4	-55.2	154.4	23 19.3	-55.4	154.6	22 25.0	-55.5	154.8	26
27	27 48.6	-54.2	153.8	26 54.7	-54.4	154.0	26 00.7	-54.6	154.2	25 06.7	-54.9	154.4	24 12.5	-55.1	154.6	23 18.2	-55.2	154.8	22 23.9	-55.5	155.0	21 29.5	-55.7	155.2	27
28	26 54.4	-54.4	154.3	26 00.3	-54.6	154.5	25 06.1	-54.8	154.7	24 11.8	-55.0	154.9	23 17.4	-55.1	155.1	22 23.0	-55.4	155.3	21 28.4	-55.5	155.4	20 33.8	-55.6	155.6	28
29	26 00.0	-54.4	154.7	25 05.7	-54.6	155.0	24 11.3	-54.8	155.1	23 16.8	-55.0	155.3	22 22.3	-55.2	155.5	21 27.6	-55.3	155.7	20 32.9	-55.5	155.8	19 38.2	-55.8	156.0	29
30	25 05.6	-54.5	155.2	24 11.1	-54.7	155.4	23 16.5	-54.9	155.6	22 21.8	-55.1	155.8	21 27.1	-55.3	155.9	20 32.3	-55.5	156.1	19 37.4	-55.6	156.2	18 42.4	-55.7	156.4	30
31	24 11.1	-54.6	155.7	23 16.4	-54.8	155.9	22 21.6	-55.0	156.0	21 26.7	-55.1	156.2	20 31.8	-55.3	156.3	19 36.8	-55.5	156.5	18 41.8	-55.7	156.6	17 46.7	-55.9	156.8	31
32	23 16.5	-54.7	156.1	22 21.6	-54.9	156.3	21 26.6	-55.0	156.5	20 31.6	-55.2	156.6	19 36.5	-55.4	156.8	18 41.3	-55.5	156.9	17 46.1	-55.7	157.0	16 50.8	-55.8	157.1	32
33	22 21.8	-54.7	156.6	21 26.7	-54.9	156.7	20 31.6	-55.1	156.9	19 36.4	-55.3	157.0	18 41.1	-55.4	157.2	17 45.8	-55.6	157.3	16 50.4	-55.8	157.4	15 55.0	-55.9	157.5	33
34	21 27.1	-54.8	157.0	20 31.8	-55.0	157.2	19 41.3	-55.2	157.4	18 47.3	-55.5	157.6	17 52.7	-55.7	157.7	16 50.4	-55.9	157.8	15 54.6	-56.1	157.9	14 59.1	-56.0	157.9	34
35	20 32.3	-54.9	157.5	19 41.3	-55.2	157.7	18 41.3	-55.5	157.8	17 46.1	-55.8	158.0	16 50.2	-56.0	158.0	15 45.5	-56.6	158.1	14 58.9	-55.9	158.2	14 03.1	-55.9	158.3	35
36	19 37.4	-55.0	157.9	18 41.8	-55.1	158.0	17 46.1	-55.3	158.1	16 50.4	-55.6	158.3	15 54.6	-55.5	158.4	14 03.0	-55.8								

27°, 333° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.	
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z		
0	50 30.1 +46.9 134.5	49 47.7 +47.7 135.3	49 04.8 +48.3 136.1	48 21.2 +49.0 136.9	47 37.1 +49.6 137.7	46 52.5 +50.2 138.4	46 07.4 +50.8 139.1	45 21.9 +51.2 139.7	0	50 31.1 +46.4 133.5	49 35.4 +47.1 134.4	49 10.2 +48.6 136.0	48 26.7 +49.2 136.8	47 42.7 +49.8 137.6	46 58.2 +50.4 138.3	46 13.1 +51.0 139.0	1	52 03.4 +45.8 132.4	51 22.5 +46.7 133.4	50 41.0 +47.4 134.3	49 58.8 +48.1 135.1	49 15.9 +48.8 135.9	48 32.5 +49.5 136.7	47 48.6 +50.0 137.5	47 04.1 +50.6 138.2	2
1	51 17.0 +46.4 133.5	50 35.4 +47.1 134.4	49 53.1 +47.9 135.2	49 10.2 +48.6 136.0	48 26.7 +49.2 136.8	47 42.7 +49.8 137.6	46 58.2 +50.4 138.3	46 13.1 +51.0 139.0	1	52 49.2 +45.3 131.4	52 09.2 +46.1 132.4	50 46.9 +47.7 134.2	50 04.7 +48.4 135.1	49 22.0 +49.0 135.9	48 38.6 +49.7 136.7	47 54.7 +50.3 137.4	3	53 34.5 +44.6 130.3	52 55.3 +45.5 131.3	52 15.3 +46.4 132.3	51 34.6 +47.1 133.2	50 53.1 +47.9 134.1	50 11.0 +48.7 135.0	48 28.3 +49.3 135.8	48 45.0 +49.9 136.6	4
5	54 19.1 +44.0 129.2	53 40.8 +44.9 130.2	53 01.7 +45.8 131.2	52 21.7 +46.7 132.2	51 41.0 +47.5 133.2	50 59.7 +48.1 134.1	50 17.6 +48.9 134.9	49 34.9 +49.6 135.8	5	55 03.1 +43.3 128.0	54 25.7 +44.3 129.1	53 47.5 +45.2 130.2	53 08.4 +46.0 131.2	52 28.5 +46.9 132.2	51 47.8 +47.7 133.1	51 06.5 +48.4 134.0	50 24.5 +49.1 134.9	6								
6	55 46.4 +42.5 126.8	55 10.0 +43.6 127.9	54 32.7 +44.5 129.0	53 54.4 +45.5 130.1	53 01.7 +45.8 130.1	52 35.5 +47.2 132.1	51 54.9 +48.0 133.1	51 13.6 +48.7 134.0	7	56 28.9 +41.7 125.5	55 53.6 +42.8 126.7	55 17.2 +43.9 127.9	54 39.9 +44.9 129.0	54 01.7 +45.8 130.1	52 22.7 +46.6 131.1	52 42.9 +47.4 132.1	52 02.3 +48.2 133.0	8								
9	57 10.6 +40.8 124.2	56 36.4 +42.0 125.4	56 01.1 +43.1 126.7	55 24.8 +44.1 127.8	54 47.5 +45.1 128.9	54 09.3 +46.4 130.0	53 30.3 +46.9 131.1	52 50.5 +47.8 132.1	9	57 51.5 +40.0 122.8	57 18.4 +41.2 124.1	56 44.2 +42.3 125.4	56 08.9 +43.4 126.6	55 32.6 +44.5 127.8	54 55.4 +45.4 128.9	54 17.2 +46.4 130.0	53 38.3 +47.2 131.1	10								
11	58 31.5 +38.9 121.4	57 59.6 +40.3 122.8	57 26.5 +41.5 124.1	56 52.3 +42.7 125.4	56 17.1 +43.7 126.6	55 40.8 +44.8 127.8	55 03.6 +45.7 128.9	54 25.5 +46.6 130.0	11	59 10.4 +38.0 119.9	58 39.9 +39.3 121.4	57 35.0 +41.8 124.1	57 00.8 +43.0 125.3	56 25.6 +44.0 126.6	55 49.3 +45.1 127.8	55 12.1 +46.0 128.9	55 58.1 +45.4 127.8	12								
13	59 48.4 +36.8 118.4	59 19.2 +38.2 119.9	58 48.6 +39.6 121.3	58 16.8 +40.9 122.7	57 43.8 +42.1 124.1	57 09.6 +43.3 125.3	56 34.4 +44.3 126.6	55 29.5 +42.5 124.1	13	60 25.2 +35.7 116.8	59 57.4 +37.2 118.4	58 57.7 +40.0 121.3	57 52.9 +42.5 122.7	57 18.7 +43.6 125.3	56 43.5 +44.7 126.6	57 28.2 +43.9 125.4	57 28.2 +43.9 125.4	14								
15	61 00.9 +34.5 115.2	60 34.6 +36.1 116.8	60 06.9 +37.5 118.3	59 37.7 +38.9 119.9	59 07.2 +40.3 121.3	58 35.4 +41.5 122.7	58 02.3 +42.8 124.1	57 28.2 +43.9 125.4	15	61 35.4 +33.1 113.5	61 10.7 +34.7 115.1	60 44.4 +36.4 116.8	60 16.6 +37.9 118.3	59 47.5 +39.3 119.8	59 16.9 +40.7 121.3	58 45.1 +42.0 122.7	58 12.1 +43.1 124.1	16								
17	62 08.5 +31.7 111.7	61 45.4 +33.5 113.4	61 20.8 +35.1 115.1	60 54.5 +36.7 116.8	60 26.8 +38.2 118.3	59 57.6 +39.7 119.9	59 27.1 +41.0 121.3	58 55.2 +42.3 122.8	17	62 40.2 +30.2 109.9	62 18.9 +32.1 111.7	61 55.9 +33.8 113.4	61 05.0 +37.1 116.8	60 37.3 +38.5 118.3	60 08.1 +40.0 119.9	59 37.5 +41.3 121.4	59 37.5 +41.3 121.4	18								
19	63 10.4 +28.7 108.0	62 51.0 +30.6 109.8	62 29.7 +32.4 111.6	62 06.7 +34.2 113.4	61 41.2 +35.8 115.1	61 15.8 +37.5 116.8	60 48.1 +38.9 118.4	60 18.8 +40.4 119.9	19	63 39.1 +27.0 106.0	63 21.6 +29.0 107.9	63 02.1 +31.0 109.8	62 40.9 +32.8 111.6	62 17.9 +34.6 113.4	61 53.3 +36.2 115.1	61 27.0 +37.8 116.8	60 59.2 +39.3 118.4	20								
21	64 06.1 +25.2 104.0	63 50.6 +27.3 106.0	63 33.1 +29.4 107.9	62 52.5 +33.1 111.6	62 29.5 +34.9 113.4	62 04.8 +36.6 115.2	61 38.5 +38.2 116.8	61 38.5 +38.2 116.8	21	64 31.3 +23.4 101.9	64 17.9 +25.6 103.9	64 02.5 +27.7 105.9	63 45.0 +29.7 107.9	63 25.6 +31.7 109.8	63 04.4 +33.5 111.6	62 41.4 +35.3 113.4	62 16.7 +37.0 115.2	22								
23	64 54.7 +21.5 99.7	64 43.5 +23.8 101.8	64 30.2 +25.9 103.9	64 14.7 +28.1 105.9	63 57.3 +30.1 107.9	63 37.9 +32.1 109.8	63 16.7 +33.9 111.7	62 53.7 +35.6 113.5	23	65 07.3 +21.8* 99.7	66 22.1 +23.2* 90.4	66 20.5 +25.8* 92.7	66 16.5 +28.3* 95.0	66 10.1 +28.8* 97.2	66 01.4 +23.2* 99.4	65 50.4 +25.6 101.6	65 37.2 +27.8 103.8	24								
25	65 35.7 +17.4* 95.2	65 29.1 +19.8* 97.4	65 20.2 +22.1 99.6	65 09.1 +24.4 101.7	64 55.8 +26.7 103.8	64 40.5 +28.8 105.9	64 23.0 +30.9 107.9	64 03.6 +32.8 109.8	25	65 53.1 +15.2* 92.9	65 48.9 +17.7* 95.1	65 42.3 +20.2* 97.3	65 33.5 +22.5 99.5	65 22.5 +24.8 101.7	65 09.3 +27.0 103.8	64 53.9 +29.2 105.9	64 36.4 +31.3 107.9	26								
27	66 08.3 +13.0* 90.5	66 06.6 +15.5* 92.8	66 02.5 +18.0* 95.0	65 56.0 +20.5* 97.3	65 47.3 +22.8* 99.5	65 36.3 +25.1 101.7	65 23.1 +27.3 103.8	65 07.7 +29.5 105.9	27	66 21.3 +10.7* 88.1	66 22.1 +13.2* 90.4	66 20.5 +15.8* 92.7	66 16.5 +18.3* 95.0	66 10.1 +20.8* 97.2	66 01.4 +23.2* 99.4	65 50.4 +25.6 101.6	65 37.2 +27.8 103.8	28								
29	66 32.0 +8.3* 85.6	66 35.3 +11.0* 88.0	66 36.3 +13.5* 90.3	66 34.8 +16.1* 92.6	66 30.9 +18.6* 94.9	66 24.6 +21.1* 97.2	66 16.0 +23.5* 99.4	66 05.0 +25.9 101.6	29	66 40.3 +6.0* 83.2	66 46.3 +8.6* 85.5	66 49.8 +11.2* 87.8	66 50.9 +13.8* 90.1	66 49.5 +16.4* 92.5	66 45.7 +19.0* 94.8	66 39.5 +21.4* 97.1	66 30.9 +23.9* 99.4	30								
31	66 46.3 +3.5* 80.6	66 54.9 +6.1* 83.0	67 01.0 +8.8* 85.3	67 04.7 +11.4* 87.6	67 05.9 +14.1* 90.0	67 04.7 +16.7* 92.4	67 00.9 +19.3* 94.7	66 54.8 +21.8* 97.1	31	66 49.8 +1.1* 78.1	67 01.0 +3.7* 80.4	67 09.8 +6.3* 82.7	67 16.1 +9.0* 85.1	67 20.0 +11.7* 87.5	67 21.4 +14.3* 89.9	67 20.2 +17.0* 92.3	67 16.6 +19.5* 94.7	32								
33	66 50.9 -1.4* 75.6	67 04.7 +1.2* 77.8	67 16.1 +3.9* 80.2	67 25.1 +6.6* 82.6	67 31.7 +9.2* 84.9	67 35.7 +11.9* 87.4	67 37.2 +14.6* 89.8	67 36.1 +17.3* 92.2	33	66 49.5 -3.8* 73.0	67 05.9 -1.2* 75.3	67 20.0 +1.4* 77.6	67 31.7 +4.0* 80.0	67 40.9 +6.7* 82.4	67 47.6 +9.5* 84.8	67 51.8 +12.2* 87.2	67 53.4 +14.9* 89.7	34								
35	66 45.7 -6.2* 70.5	67 04.7 -3.8* 72.7	67 21.4 -1.2* 75.0	67 35.7 +1.5* 77.3	67 47.6 +4.2* 79.7	67 57.1 +6.9* 82.2	68 04.0 +9.6* 84.6	68 08.3 +12.4* 87.1	35	66 39.5 -8.6* 68.0	67 00.9 -6.1* 70.2	67 20.2 -3.6* 72.4	67 37.2 -1.1* 74.7	67 51.8 +1.6* 77.1	68 04.0 +4.3* 79.5	68 13.6 +7.1* 82.0	68 20.7 +9.9* 84.5	36								
37	66 30.9 -11.0* 65.5	66 54.8 -8.8* 67.6	67 16.6 -6.2* 69.8	67 36.1 -3.6* 72.1	67 53.4 -0.9* 74.4	68 08.3 +1.7* 76.8	68 20.7 +4.5* 79.3	68 30.6 +7.3* 81.8	37	66 19.9 -13.2* 63.0	66 46.2 -11.0* 65.1	67 10.4 -8.6* 67.2	67 32.5 -6.1* 69.5	67 52.5 -3.6* 71.8	68 10.0 -0.8* 74.1	68 25.2 +1.8* 76.6	68 37.9 +4.6* 79.1	38								
39	66 06.7 -15.5* 60.6	66 35.2 -13.3* 62.6	67 01.8 -11.0* 64.7	67 26.4 -8.5* 66.9	67 48.9 -6.1* 69.1	68 09.2 -3.5* 71.5	68 27.0 -0.8* 73.9	68 42.5 +1.9* 76.3	39	65 51.2 -17.6* 58.2	66 21.9 -15.5* 60.2	66 50.8 -13.3* 62.2	67 17.9 -11.1* 64.3	67 42.8 -8.6* 66.5	68 05.7 -6.1* 68.8	68 26.2 -3.4* 71.1	68 44.4 -0.7* 73.6	40								
41	65 33.6 -19.8* 55.9	66 06.4 -17.7* 57.8	66 37.5 -15.6* 59.7	67 06.8 -13.4* 61.8	67 34.2 -11.0* 63.9	67 59.6 -8.6* 66.1	68 22.8 -6.1* 68.4	68 43.7 -3.4* 70.8	41	65 13.8 -21.7* 53.6	65 48.7 -19.9* 55.4	66 21.9 -17.8* 57.3	66 53.4 -15.7* 59.3	67 23.2 -13.5* 61.3	67 51.0 -11.2* 63.5	68 16.7 -8.7* 65.7	68 40.3 -6.1* 68.1	42								
42	64 52.1 -23.6 51.4	65 28.8 -21.8 53.1	66 04.1 -20.0* 54.9	66 37.7 -17.9* 56.8	67 09.7 -15.8* 58.8	67 39.8 -13.5* 60.9	68 08.0 -11.2* 63.1	68 25.4 -16.0* 58.3	42	64 28.5 -25.5 49.3	65 07.0 -23.8 50.9	65 44.1 -22.0 52.6	66 19.8 -20.1* 54.4	66 53.9 -18.1* 56.3	67 26.3 -16.0* 58.3	68 25.4 -13.6* 62.6	68 25.4 -13.6* 62.6	43								
44	64 03.0 -27.2 47.2	64 43.2 -25.6 48.7	64 17.6 -27.4 46.6	64 37.6 -24.1 49.8	65 15.6 -22.4* 51.6	66 35.8 -20.2* 53.9	67 10.3 -18.2* 55.8	67 43.2 -16.1* 57.9	44	64 35.8 -40.1 29.8	65 18.7 -39.3 30.7	66 10.1 -38.5 31.6	66 09.7 -37.6 32.5	66 50.1 -31.3 40.8	66 50.0 -29.2 42.2	65 33.9 -28.5 43.7	66 16.7 -26.9 45.3	45								
46	64 35.8 -28.8 45.2	64 17.6 -27.4 46.6	64 58.2 -25.8 48.2	65 37.6 -24.1 49.8	66 15.6 -22.4* 51.6	65 53.2 -24.3 49.3	66 31.7 -22.5* 51.0	67 08.7 -20.6* 52.9	46	64 07.0 -30.4 43.2	63 50.4 -27.2 43.2	64 32.4 -25.7 46.1	65 13.5 -26.0 47.6	65 32.5 -24.3 49.3	66 31.7 -22.5* 51.0	67 27.1 -18.4* 55.3	68 00.3 -16.2* 57.4	46								
47	64 37.0 -30.4 43.2	6																								

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 27°, 333°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	50	30.1	-47.5	134.5	49	47.7	-48.1	135.3	49	04.8	-48.8	136.1	48	21.2	-49.3	136.9	47	37.1	-49.9	137.7	46	52.5	-50.5	138.4	46	07.4	-51.0	139.1	45	21.9	-51.6	139.7	0
1	49	42.6	-47.8	135.4	48	59.6	-48.5	136.2	48	16.0	-49.1	137.0	47	31.9	-49.8	137.8	46	47.2	-50.3	138.5	46	02.0	-50.8	139.2	45	16.4	-51.3	139.8	44	30.3	-51.8	140.5	1
2	48	54.8	-48.3	136.3	48	11.1	-48.9	137.1	47	26.9	-49.5	137.9	46	42.1	-50.0	138.6	45	56.9	-50.6	139.3	45	11.2	-51.1	139.9	44	25.1	-51.6	140.6	43	38.5	-52.0	141.2	2
3	48	06.5	-48.7	137.2	47	22.2	-49.3	138.0	46	37.4	-49.9	138.7	45	52.1	-50.4	139.4	45	06.3	-50.9	140.0	44	20.1	-51.4	140.7	43	33.5	-51.9	141.3	42	46.5	-52.3	141.9	3
4	47	17.8	-49.1	138.1	46	32.9	-49.6	138.8	45	47.5	-50.2	139.5	45	01.7	-50.7	140.1	44	15.4	-51.2	140.8	43	28.7	-51.6	141.4	42	41.6	-52.1	142.0	41	54.2	-52.5	142.5	4
5	46	28.7	-49.4	138.9	45	43.3	-50.4	139.6	44	57.3	-50.5	140.3	44	11.0	-51.0	140.9	43	24.2	-51.5	141.5	42	37.1	-51.9	142.1	41	49.5	-52.3	142.6	41	01.7	-52.7	143.2	5
6	45	39.3	-49.8	139.8	44	53.3	-50.3	140.4	44	06.8	-50.8	141.0	43	20.0	-51.3	141.6	42	32.7	-51.7	142.2	41	45.2	-52.2	142.8	40	57.2	-52.5	143.3	40	09.0	-52.9	143.8	6
7	44	49.5	-50.1	140.6	44	03.0	-50.6	141.2	43	16.0	-51.0	141.8	42	28.7	-51.5	142.3	41	41.0	-51.9	142.9	40	53.0	-52.3	143.4	40	04.7	-52.7	143.9	39	16.1	-53.2	144.4	7
8	43	59.4	-50.4	141.3	43	12.4	-50.8	141.9	42	25.0	-51.3	142.5	41	37.2	-51.7	143.0	40	49.1	-52.2	143.6	40	00.7	-52.6	144.1	39	12.0	-53.0	144.5	38	22.9	-53.2	145.0	8
9	43	09.0	-50.7	142.1	42	21.5	-51.1	142.6	41	33.7	-51.6	143.2	40	45.5	-52.0	143.7	39	56.9	-52.3	144.2	38	09.1	-52.7	144.7	37	29.7	-53.5	145.6	9				
10	42	18.3	-50.9	142.8	41	30.4	-51.4	143.3	40	42.1	-51.8	143.9	39	53.5	-52.2	144.4	38	04.6	-52.6	144.8	37	25.9	-53.3	145.7	36	36.2	-53.6	146.2	10				
11	41	27.4	-51.2	143.5	40	39.0	-51.6	144.0	39	50.3	-52.0	144.5	39	01.3	-52.4	145.0	38	12.0	-52.8	145.5	37	22.4	-53.1	145.9	36	32.6	-53.4	146.3	35	42.6	-53.8	146.7	11
12	40	36.2	-51.5	144.2	39	47.4	-51.9	144.7	38	58.3	-52.3	145.2	38	08.9	-52.6	145.6	37	19.2	-52.9	146.1	36	29.3	-53.2	146.5	35	39.2	-53.6	146.9	34	48.8	-53.9	147.3	12
13	39	44.7	-51.6	144.9	38	55.5	-52.0	145.3	38	06.0	-52.4	145.8	37	16.3	-52.8	146.2	36	26.3	-53.1	146.6	35	36.1	-53.5	147.0	34	45.6	-53.7	147.4	33	54.9	-54.0	147.8	13
14	38	53.1	-51.9	145.5	38	03.5	-52.3	146.0	37	13.6	-52.6	146.4	36	23.5	-52.9	146.8	35	33.2	-53.3	147.2	34	42.6	-53.6	147.6	33	51.9	-53.8	148.0	33	00.9	-54.2	148.3	14
15	38	01.2	-52.1	146.2	37	11.2	-52.4	146.6	36	21.0	-52.8	147.0	35	30.6	-53.2	147.4	34	39.9	-53.4	147.8	33	49.0	-53.7	148.1	32	58.0	-54.0	148.5	32	06.7	-54.2	148.8	15
16	37	09.1	-52.3	146.8	36	18.8	-52.7	147.2	35	28.2	-52.9	147.6	34	37.4	-53.2	148.0	33	46.5	-53.6	148.3	32	55.3	-53.8	148.7	32	04.0	-54.2	149.0	31	12.5	-54.4	149.3	16
17	36	16.8	-52.5	147.4	35	26.1	-52.8	147.8	34	35.3	-53.2	148.2	33	44.2	-53.4	148.5	32	52.9	-53.7	148.9	31	01.5	-54.0	149.2	30	09.8	-54.2	149.5	30	18.1	-54.5	149.8	17
18	35	24.3	-52.6	148.0	34	33.3	-52.9	148.4	33	42.1	-53.2	148.7	32	50.8	-53.6	149.1	31	59.2	-53.8	149.4	30	07.5	-54.1	149.7	30	15.6	-54.4	150.0	29	23.6	-54.7	150.3	18
19	34	31.7	-52.8	148.6	33	40.4	-53.1	148.9	32	48.9	-53.4	149.3	31	57.2	-53.7	149.6	30	13.4	-54.2	150.2	29	21.2	-54.5	150.8	28	28.9	-54.7	150.8	19				
20	33	38.9	-53.0	149.2	32	47.3	-53.3	149.5	31	55.5	-53.6	149.8	31	03.5	-53.8	150.1	30	11.4	-54.0	150.4	29	19.2	-54.4	150.7	28	26.8	-54.6	151.0	27	34.2	-54.8	151.2	20
21	32	45.9	-53.1	149.7	31	54.0	-53.4	150.1	31	01.9	-53.6	150.4	30	09.7	-53.9	150.6	29	17.4	-54.2	150.9	28	24.8	-54.5	151.2	26	39.4	-54.8	151.7	21				
22	31	52.8	-53.2	150.3	31	00.6	-53.5	150.6	30	08.3	-53.8	150.9	29	15.8	-54.0	151.2	28	23.2	-54.3	151.4	27	30.4	-54.5	151.7	26	37.6	-54.8	151.9	25	44.6	-55.0	152.1	22
23	30	59.6	-53.4	150.8	30	07.1	-53.6	151.1	29	14.5	-53.9	151.4	28	21.8	-54.2	151.6	27	28.9	-54.4	151.9	26	35.9	-54.6	152.1	25	42.8	-54.8	152.4	24	49.6	-55.0	152.6	23
24	30	06.2	-53.5	151.4	29	13.5	-53.8	151.6	28	20.6	-54.0	151.9	27	27.6	-54.2	152.1	26	34.5	-54.5	152.4	25	41.3	-54.7	152.6	24	48.0	-54.9	152.8	23	54.6	-55.2	153.0	24
25	29	12.7	-53.7	151.9	28	19.7	-53.9	152.1	27	26.6	-54.1	152.4	26	33.4	-54.4	152.6	25	40.0	-54.5	152.8	24	46.6	-54.8	153.1	23	53.1	-55.0	153.3	22	59.4	-55.1	153.5	25
26	28	19.0	-53.7	152.4	27	25.8	-54.0	152.6	26	32.5	-54.2	152.9	25	39.0	-54.4	153.1	24	45.5	-54.7	153.3	23	58.1	-55.1	153.7	22	04.3	-55.3	153.9	26				
27	27	25.3	-53.8	152.9	26	31.8	-54.0	153.1	25	38.3	-54.3	153.3	24	44.6	-54.5	153.6	23	50.8	-54.7	153.8	22	03.0	-55.0	153.9	21	09.0	-55.3	154.1	27				
28	26	31.5	-54.0	153.4	25	37.8	-54.2	153.6	24	44.0	-54.4	153.8	23	50.1	-54.6	154.0	22	02.0	-54.9	154.4	21	07.9	-55.2	154.5	20	13.7	-55.4	154.7	28				
29	25	37.5	-54.0	153.9	24	43.6	-54.3	154.1	23	49.6	-54.5	154.3	22	55.5	-54.7	154.5	21	01.3	-54.9	154.6	20	12.7	-55.2	155.0	19	18.3	-55.4	155.1	29				
30	24	43.5	-54.2	154.4	23	49.3	-54.3	154.5	22	55.1	-54.5	154.7	22	00.8	-54.7	154.9	21	06.4	-54.9	155.1	20	12.0	-55.1	155.2	19	17.5	-55.3	155.4	30				
31	23	49.3	-54.2	154.8	22	55.0	-54.4	155.0	22	06.6	-54.6	155.2	21	10.1	-55.0	155.5	20	11.5	-55.2	155.7	18	22.2	-55.4	155.8	17	27.4	-55.5	155.9	31				
32	22	55.1	-54.3	155.3	22	00.6	-54.5	155.5	21	06.0	-54.7	155.6	20	11.3	-54.9	155.8	19	16.5	-55.0	155.9	18	21.7	-55.2	156.1	16	31.9	-55.6	156.3	32				
33	22	00.8	-54.4	155.8	21	06.1	-54.6	160.1	20	01.4	-55.2	160.2	19	06.5	-55.3	160.3	18	08.5	-55.5	160.3	17	25.0	-55.7	160.7	16	31.4	-55.8	160.8	15				
34	21	06.4	-55.0	160																													

28°, 332° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Dec.																					
0	49 52.6 +46.3	133.2		49 11.2 +47.0	134.1		48 29.1 +47.8	134.9		47 46.5 +48.4	135.7		47 03.2 +49.1	136.4		46 19.5 +49.7	137.2		45 35.2 +50.3	137.9		44 50.5 +50.8	138.5		0
1	50 38.9 +45.8	132.2		49 58.2 +46.6	133.1		49 16.9 +47.2	134.0		48 34.9 +48.0	134.8		47 52.3 +48.7	135.6		47 09.2 +49.3	136.4		46 25.5 +49.9	137.1		45 41.3 +50.5	137.8		1
2	51 24.7 +45.2	131.2		50 44.8 +46.0	132.1		50 04.1 +46.9	133.0		49 22.9 +47.5	133.9		48 41.0 +48.2	134.7		47 58.5 +48.9	135.5		47 15.4 +49.5	136.3		46 31.8 +50.1	137.0		2
3	52 09.9 +44.6	130.2		51 30.8 +45.5	131.1		50 51.0 +46.3	132.0		50 10.4 +47.1	132.9		49 29.2 +47.8	133.8		48 47.4 +48.5	134.6		48 04.9 +49.2	135.4		47 21.9 +49.8	136.2		3
4	52 54.5 +44.0	129.1		52 16.3 +44.9	130.1		51 37.3 +45.7	131.0		50 57.5 +46.6	132.0		50 17.0 +47.4	132.9		49 35.9 +48.1	133.7		48 54.1 +48.8	134.6		48 11.7 +49.4	135.4		4
5	53 38.5 +43.3	127.9		53 01.2 +44.3	129.0		52 23.0 +45.2	130.0		51 44.1 +46.0	131.0		51 04.4 +46.8	131.9		50 24.0 +47.6	132.8		49 42.9 +48.3	133.7		49 01.1 +49.0	134.5		5
6	54 21.8 +42.6	126.7		53 45.5 +43.6	127.8		53 08.2 +44.6	128.9		52 30.1 +45.5	129.9		51 51.2 +46.4	130.9		51 11.6 +47.1	131.8		50 31.2 +47.9	132.7		49 50.1 +48.6	133.6		6
7	55 04.4 +41.9	125.5		54 29.1 +42.9	126.7		53 52.8 +43.9	127.8		53 15.6 +44.9	128.8		52 37.6 +45.7	129.9		51 58.7 +46.6	130.8		51 19.1 +47.4	131.8		50 38.7 +48.2	132.7		7
8	55 46.3 +41.0	124.3		55 12.0 +42.2	125.5		54 36.7 +43.2	126.6		50 00.5 +44.2	127.7		52 23.3 +45.2	128.8		52 45.3 +46.1	129.8		52 06.5 +46.9	130.8		51 26.9 +47.7	131.8		8
9	56 27.3 +40.2	123.0		55 54.2 +41.3	124.2		55 19.9 +45.6	125.4		54 44.7 +43.5	126.6		54 08.5 +44.5	127.7		53 31.4 +45.4	128.7		52 53.4 +46.3	129.8		52 14.6 +47.2	130.8		9
10	57 07.5 +39.3	121.6		56 35.5 +40.5	122.9		56 02.4 +41.7	124.1		55 28.2 +42.8	125.3		54 53.0 +43.8	126.5		54 16.8 +44.8	127.6		53 39.7 +45.8	128.7		53 01.8 +46.6	129.8		10
11	57 46.8 +38.3	120.2		57 16.0 +39.7	121.5		56 44.1 +40.8	122.8		56 11.0 +42.0	124.1		55 36.8 +43.1	125.3		55 01.6 +44.2	126.5		54 25.5 +45.1	127.6		53 48.4 +46.1	128.7		11
12	58 25.1 +37.3	118.7		57 55.7 +38.6	120.1		57 24.9 +40.0	121.5		56 53.0 +41.2	122.8		56 19.9 +42.3	124.1		55 45.8 +43.4	125.3		55 10.6 +44.5	126.5		54 34.5 +45.4	127.6		12
13	59 02.4 +36.2	117.2		58 34.3 +37.6	118.7		58 04.9 +39.0	120.1		57 34.2 +40.2	121.5		57 02.2 +41.6	122.8		56 29.2 +42.7	124.1		55 55.1 +43.7	125.3		55 19.9 +44.8	126.5		13
14	59 38.6 +35.1	115.7		59 11.9 +36.6	117.2		58 43.9 +37.9	118.6		58 14.4 +39.4	120.1		57 43.8 +40.6	121.4		57 11.9 +41.8	122.8		56 38.8 +43.0	124.1		56 04.7 +44.1	125.3		14
15	60 13.7 +33.8	114.0		59 48.5 +35.4	115.6		59 21.8 +36.9	117.1		58 53.8 +38.3	118.6		58 24.4 +39.7	120.1		57 53.7 +41.0	121.4		57 21.8 +42.2	122.8		56 48.8 +43.3	124.1		15
16	60 47.5 +32.5	112.4		60 23.9 +34.2	114.0		59 58.7 +35.8	115.6		59 32.1 +37.3	117.1		59 04.1 +38.6	118.6		58 34.7 +40.0	120.0		58 04.0 +41.3	121.4		57 32.1 +42.5	122.8		16
17	61 20.0 +31.2	110.6		60 58.1 +32.8	112.3		60 34.5 +34.5	114.0		60 09.4 +36.1	115.6		59 42.7 +37.7	117.1		59 14.7 +39.0	118.6		58 45.3 +40.4	120.1		58 14.6 +41.7	121.5		17
18	61 51.2 +29.7	108.8		61 30.9 +31.5	110.6		61 09.0 +33.3	112.3		60 45.5 +34.9	113.9		60 20.4 +36.4	115.5		59 53.7 +38.0	117.1		59 25.7 +39.4	118.6		58 56.3 +40.7	120.1		18
19	62 20.9 +28.1	107.0		62 02.4 +30.1	108.8		61 42.3 +31.8	110.5		61 20.4 +33.6	112.3		60 56.8 +35.3	113.9		60 31.7 +36.0	115.5		60 05.1 +38.3	117.1		59 37.0 +39.8	118.6		19
20	62 49.0 +26.6	105.1		62 32.5 +28.5	106.9		62 14.1 +30.4	108.7		61 54.0 +32.2	110.5		61 32.1 +34.0	112.2		61 08.6 +35.6	113.9		60 43.4 +37.3	115.6		60 16.8 +38.7	117.1		20
21	63 15.6 +24.8	103.1		63 01.0 +26.9	105.0		62 44.5 +28.9	106.9		62 26.2 +30.8	108.7		62 06.1 +32.6	110.5		61 44.2 +34.4	112.2		61 20.7 +36.0	113.9		60 55.5 +37.6	115.6		21
22	63 40.4 +23.1	101.0		63 27.9 +25.2	103.0		63 13.4 +27.3	104.9		62 57.0 +29.2	106.8		62 38.7 +31.1	108.7		62 18.6 +32.9	110.5		61 56.7 +34.7	112.3		61 33.1 +36.4	114.0		22
23	64 03.5 +21.2	98.9		63 53.1 +23.4	101.0		63 40.7 +25.5	102.9		63 26.2 +27.6	104.9		63 09.8 +29.6	106.8		62 51.5 +31.6	108.7		62 31.4 +33.4	110.5		62 09.5 +35.1	112.3		23
24	64 24.7 +19.2	96.8		64 16.5 +21.5	98.9		64 06.2 +23.8	100.9		63 53.8 +25.9	102.9		63 39.4 +28.0	104.9		63 23.1 +30.0	106.8		63 04.8 +31.9	108.7		62 44.6 +33.8	110.5		24
25	64 43.9 +17.3*	94.6		64 38.0 +19.6	96.7		64 30.0 +21.8	98.8		64 19.7 +24.2	100.8		64 07.4 +26.3	102.9		63 53.1 +28.3	104.8		63 36.7 +30.4	106.8		63 18.4 +32.3	108.7		25
26	65 01.2 +15.2*	92.3		64 57.6 +17.6*	94.5		64 51.8 +20.0*	96.6		64 43.9 +22.2*	98.7		64 33.7 +24.5	100.8		64 21.4 +26.7	102.8		64 07.1 +28.7	104.8		63 50.7 +30.8	106.8		26
27	65 16.4 +13.0*	90.0		65 15.2 +15.5*	92.2		65 11.8 +17.8*	94.4		65 06.1 +20.2*	96.5		64 58.2 +22.5	98.6		64 48.1 +24.8	100.7		64 35.8 +27.0	102.8		64 21.5 +29.1	104.8		27
28	65 29.4 +10.8*	87.7		65 30.7 +13.3*	89.9		65 29.6 +15.8*	92.1		65 26.3 +18.2*	94.3		65 20.7 +20.6*	96.4		65 12.9 +22.9	98.6		65 02.8 +25.2	100.7		64 50.6 +27.4	102.8		28
29	65 40.2 +8.6*	85.3		65 44.0 +11.0*	87.5		65 45.4 +13.6*	89.7		65 44.5 +16.1*	92.0		65 41.3 +18.5*	94.0		65 35.8 +20.9*	96.4		65 28.0 +23.3*	98.5		65 18.0 +25.5	100.7		29
30	65 48.8 +6.2*	82.9		65 55.0 +8.8*	85.1		65 59.0 +11.3*	87.3		66 00.6 +13.8*	89.6		65 59.8 +16.4*	91.8		65 56.7 +18.8*	94.1		65 51.3 +21.2*	96.3		65 43.5 +23.7	98.5		30
31	65 55.0 +4.0*	80.5		66 03.8 +6.5*	82.7		66 10.3 +9.0*	84.9		66 14.4 +11.6*	86.7		66 16.2 +14.1*	89.5		66 15.5 +16.7*	91.7		66 12.5 +19.2*	94.0		66 07.2 +21.6*	96.3		31
32	65 59.0 +1.6*	78.0		66 10.3 +4.1*	80.2		66 19.3 +6.7*	82.5		66 26.0 +9.3*	84.7		66 30.3 +11.8*	87.0		66 32.2 +32.4*	89.3		66 31.7 +31.6*	91.6		66 28.8 +19.4*	93.9		32
33	66 00.6 -0.8*	75.6		66 14.4 +1.8*	77.8		66 26.0 +4.3*	80.0		66 35.3 +6.8*	82.3		66 42.1 +9.5*	84.6		66 46.6 +12.1*	86.9		66 48.6 +14.7*	89.2		66 48.2 +17.3*	91.6		33
34	65 59.8 -3.1*	73.1		66 16.2 -0.7*	75.3		66 30.3 -1.9*	77.5		66 42.1 -29.7	82.2		66 55.5 -19.1*	84.5		66 29.5 -17.0*	86.3		66 02.0 -27.2	84.8		67 40.3 -2.7*	71.2		34
35	66 15.5 -3.0*	72.8		66 32.2 -0.5*	75.0		66 46.6 +2.0*	77.2		66 58.7 +4.6*	79.5		67 08.4 +7.3*	81.9		67 15.7 +9.9*	84.2		67 20.5 +12.6*	86.6		65 48.4 +23.5*	75.5		35
36	66 12.5 -5.3*	70.3		66 31.7 -2.9*	72.5		66 48.6 -0.4*	74.7		67 03.3 +2.2*	77.0		67 15.7 +4.8*	79.3		67 25.6 +7.5*	81.7		67 33.1 +10.1*	84.1		67 33.1 +10.1*	84.1		36
37</td																									

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 28°, 332°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	49 52.6 -46.8	133.2	49 11.2 -47.6	134.1	48 29.1 -48.2	134.9	47 46.5 -48.9	135.7	47 03.2 -49.4	136.4	46 19.5 -50.0	137.2	45 35.2 -50.5	137.9	44 50.5 -51.1	138.5	43 59.4 -51.3	139.3	43 44.7 -50.8	138.6	43 59.4 -51.3	139.3	43 08.1 -51.6	140.0	4
1	49 05.8 -47.3	134.2	48 23.6 -47.9	135.0	47 40.9 -48.6	135.8	46 57.6 -49.2	136.5	46 13.8 -49.8	137.3	45 29.5 -50.3	138.0	44 44.7 -50.8	138.6	43 53.9 -51.2	139.4	43 08.1 -51.6	140.0	42 16.5 -51.8	140.7	43 08.1 -51.6	140.7	43 20.3 -53.4	141.7	2
2	48 18.5 -47.7	135.1	47 35.7 -48.3	135.9	46 52.3 -48.9	136.7	46 08.4 -49.5	137.4	45 24.0 -50.1	138.1	44 39.2 -50.7	138.7	43 53.9 -51.2	139.4	43 08.1 -51.6	140.0	42 11.3 -51.6	140.8	41 24.7 -52.1	141.4	41 24.7 -52.1	141.4	41 36.7 -52.4	141.0	4
3	47 30.8 -48.1	136.0	46 47.4 -48.4	136.8	46 03.4 -49.3	137.5	45 18.9 -49.9	138.2	44 33.9 -50.4	138.8	43 48.5 -50.9	139.5	43 02.7 -51.4	140.1	42 11.3 -51.6	140.8	41 24.7 -52.1	141.4	41 24.7 -52.1	141.4	41 36.7 -52.4	141.0	4		
4	46 42.7 -48.5	136.9	45 58.6 -49.1	137.6	45 14.1 -49.7	138.3	44 29.0 -50.2	139.0	43 43.5 -50.7	139.6	42 57.6 -51.1	140.2	42 11.3 -51.6	140.8	41 24.7 -52.1	141.4	41 24.7 -52.1	141.4	41 36.7 -52.4	141.0	41 00.0 +52.9	0.0	40 32.6 -52.3	142.0	5
5	45 54.2 -48.9	137.8	45 09.5 -49.4	138.5	44 24.4 -50.0	139.1	43 38.8 -50.5	139.7	42 52.8 -50.9	140.3	42 06.5 -51.5	140.9	41 19.7 -51.8	141.5	40 32.6 -52.3	142.0	40 32.6 -52.3	142.0	40 32.6 -52.3	142.0	40 32.6 -52.3	142.0	40 32.6 -52.3	142.0	5
6	45 05.3 -49.2	138.6	44 20.1 -49.8	139.2	43 34.4 -50.2	139.9	42 48.3 -50.7	140.5	42 01.9 -51.3	141.1	41 15.0 -51.7	141.6	40 27.8 -52.1	142.1	39 40.3 -52.5	142.7	39 40.3 -52.5	142.7	39 40.3 -52.5	142.7	39 40.3 -52.5	142.7	39 40.3 -52.5	142.7	6
7	44 16.1 -49.5	139.4	43 30.3 -50.0	140.0	42 44.2 -50.6	140.6	41 57.6 -51.0	141.2	41 10.6 -51.4	141.8	40 23.3 -51.9	142.3	39 35.7 -52.3	142.8	38 47.8 -52.7	143.3	38 47.8 -52.7	143.3	38 47.8 -52.7	143.3	38 47.8 -52.7	143.3	38 47.8 -52.7	143.3	7
8	43 26.6 -49.9	140.2	42 40.3 -50.4	140.8	41 53.6 -50.8	141.4	41 06.6 -51.3	141.9	40 19.2 -51.7	142.4	39 31.4 -52.1	142.9	38 43.4 -52.5	143.4	37 55.1 -52.9	143.9	37 55.1 -52.9	143.9	37 55.1 -52.9	143.9	37 55.1 -52.9	143.9	37 55.1 -52.9	143.9	8
9	42 36.7 -50.2	140.9	41 49.9 -50.6	141.5	41 02.8 -51.1	142.1	40 15.3 -51.5	142.6	39 27.5 -52.0	143.1	38 39.3 -52.3	143.6	37 50.9 -52.7	144.0	37 02.2 -53.1	144.5	37 02.2 -53.1	144.5	37 02.2 -53.1	144.5	37 02.2 -53.1	144.5	37 02.2 -53.1	144.5	9
10	41 46.5 -50.4	141.7	40 59.3 -50.9	142.2	40 11.7 -51.3	142.8	39 23.8 -51.8	143.3	38 35.5 -52.1	143.7	37 47.0 -52.5	144.2	36 58.2 -52.8	144.6	36 09.1 -53.2	145.1	36 09.1 -53.2	145.1	36 09.1 -53.2	145.1	36 09.1 -53.2	145.1	36 09.1 -53.2	145.1	10
11	40 56.1 -50.7	142.4	40 08.4 -51.1	142.9	39 20.4 -51.6	143.4	38 32.0 -51.9	143.9	37 43.4 -52.3	144.4	36 54.5 -52.7	144.8	36 05.3 -53.0	145.2	35 15.9 -53.3	145.6	35 15.9 -53.3	145.6	35 15.9 -53.3	145.6	35 15.9 -53.3	145.6	35 15.9 -53.3	145.6	11
12	40 05.4 -50.9	143.1	39 17.3 -51.4	143.6	38 28.8 -51.8	144.1	37 40.1 -52.2	144.5	36 51.1 -52.5	145.0	36 01.8 -52.9	145.4	35 12.3 -53.2	145.8	34 22.6 -53.6	146.2	34 22.6 -53.6	146.2	34 22.6 -53.6	146.2	34 22.6 -53.6	146.2	34 22.6 -53.6	146.2	12
13	39 14.5 -51.2	143.8	38 25.9 -51.6	144.3	37 37.0 -51.9	144.7	36 47.9 -52.3	145.2	35 58.6 -52.7	145.6	35 08.9 -53.0	146.0	34 19.1 -53.4	146.4	33 29.0 -53.6	146.7	33 29.0 -53.6	146.7	33 29.0 -53.6	146.7	33 29.0 -53.6	146.7	33 29.0 -53.6	146.7	13
14	38 23.3 -51.4	144.5	37 34.3 -51.8	144.9	36 45.1 -52.2	145.4	35 55.6 -52.5	145.8	35 05.9 -52.9	146.2	34 15.9 -53.2	146.6	33 25.7 -53.5	146.9	32 35.4 -53.8	147.3	32 35.4 -53.8	147.3	32 35.4 -53.8	147.3	32 35.4 -53.8	147.3	32 35.4 -53.8	147.3	14
15	37 31.9 -51.7	145.1	36 42.5 -52.0	145.6	35 52.9 -52.3	146.0	35 03.1 -52.7	146.4	34 13.0 -53.0	146.7	33 22.7 -53.3	147.1	32 32.2 -53.6	147.5	31 41.6 -54.0	147.8	31 41.6 -54.0	147.8	31 41.6 -54.0	147.8	31 41.6 -54.0	147.8	31 41.6 -54.0	147.8	15
16	36 40.2 -51.8	145.8	35 50.5 -52.2	146.2	35 00.6 -52.6	146.6	34 10.4 -52.9	146.9	33 20.0 -53.2	147.3	32 29.4 -53.5	147.7	31 38.6 -53.8	148.0	30 47.6 -54.0	148.3	30 47.6 -54.0	148.3	30 47.6 -54.0	148.3	30 47.6 -54.0	148.3	30 47.6 -54.0	148.3	16
17	35 48.4 -52.0	146.4	34 58.3 -52.3	146.8	34 08.0 -52.6	147.2	33 17.5 -53.0	147.5	32 26.8 -53.3	147.9	31 35.9 -53.6	148.2	30 44.8 -53.8	148.5	29 53.6 -54.2	148.8	29 53.6 -54.2	148.8	29 53.6 -54.2	148.8	29 53.6 -54.2	148.8	29 53.6 -54.2	148.8	17
18	34 56.4 -52.2	147.0	34 06.0 -52.5	147.4	33 15.4 -52.9	147.7	32 24.5 -53.1	148.1	31 33.5 -53.4	148.4	30 42.3 -53.7	148.7	29 51.0 -54.0	149.0	28 59.4 -54.2	149.3	28 59.4 -54.2	149.3	28 59.4 -54.2	149.3	28 59.4 -54.2	149.3	28 59.4 -54.2	149.3	18
19	34 04.2 -52.3	147.6	33 13.5 -52.7	148.0	32 22.5 -53.0	148.3	31 31.4 -53.3	148.6	30 40.1 -53.6	148.9	29 48.6 -53.8	149.2	28 57.0 -54.1	149.5	28 05.2 -54.4	149.8	28 05.2 -54.4	149.8	28 05.2 -54.4	149.8	28 05.2 -54.4	149.8	28 05.2 -54.4	149.8	19
20	33 11.9 -52.6	148.2	32 20.8 -52.8	148.5	31 29.5 -53.1	148.8	30 38.1 -53.4	149.2	29 46.5 -53.7	149.5	28 54.8 -54.0	149.7	28 02.9 -54.2	150.0	27 10.8 -54.4	150.3	27 10.8 -54.4	150.3	27 10.8 -54.4	150.3	27 10.8 -54.4	150.3	27 10.8 -54.4	150.3	20
21	32 19.3 -52.6	148.8	31 28.0 -53.0	149.1	30 36.4 -53.3	149.4	29 44.7 -53.6	149.7	28 52.8 -53.8	150.0	28 00.8 -54.1	150.2	27 08.7 -54.4	150.5	26 16.4 -54.6	150.7	26 16.4 -54.6	150.7	26 16.4 -54.6	150.7	26 16.4 -54.6	150.7	26 16.4 -54.6	150.7	21
22	31 26.7 -52.8	149.3	30 35.0 -53.1	149.6	29 43.1 -53.3	149.9	28 51.1 -53.6	150.2	27 59.0 -53.9	150.5	27 06.7 -54.1	150.7	26 14.3 -54.4	151.0	25 19.9 -54.4	151.4	25 19.9 -54.4	151.4	25 19.9 -54.4	151.4	25 19.9 -54.4	151.4	25 19.9 -54.4	151.4	22
23	30 33.9 -53.0	149.9	29 41.9 -53.3	150.2	28 49.8 -53.5	150.4	27 57.5 -53.8	150.7	27 05.1 -54.0	151.0	26 12.6 -54.3	151.2	25 19.9 -54.4	151.4	24 27.2 -54.7	151.7	24 27.2 -54.7	151.7	24 27.2 -54.7	151.7	24 27.2 -54.7	151.7	24 27.2 -54.7	151.7	23
24	29 40.9 -53.1	150.4	28 48.6 -53.3	150.7	27 56.3 -53.7	151.0	27 03.7 -53.8	151.2	26 11.1 -54.1	151.4	25 18.3 -54.3	151.7	24 25.5 -54.6	152.0	23 32.7 -54.9	152.3	23 32.7 -54.9	152.3	23 32.7 -54.9	152.3	23 32.7 -54.9	152.3	23 32.7 -54.9	152.3	23
25	28 47.8 -53.2	151.0	27 55.3 -53.5	151.2	27 02.6 -53.7	151.5	26 09.9 -54.0	151.7	25 17.0 -54.2	151.9	24 24.0 -54.4	152.1	23 30.9 -54.7	152.4	22 37.7 -54.9	152.6	22 37.7 -54.9	152.6	22 37.7 -54.9	152.6	22 37.7 -54.9	152.6	22 37.7 -54.9	152.6	25
26	27 54.6 -53.3	151.5	27 01.8 -53.6	151.7	26 08.9 -53.8	152.0	25 15.9 -54.1	152.2	24 22.8 -54.3	152.4	23 29.6 -54.6	152.6	22 36.2 -54.7	152.8	21 42.8 -54.9	153.0	21 42.8 -54.9	153.0	21 42.8 -54.9	153.0	21 42.8 -54.9	153.0	21 42.8 -54.9	153.0	26
27	27 01.3 -53.5	152.0	26 08.2 -53.7	152.2	25 15.1 -53.9	152.5	24 21.8 -54.1	152.7	23 28.5 -54.4	152.9	22 35.0 -54.5	153.1	21 41.5 -54.7	153.2	20 47.9 -55.0	153.4	20 47.9 -55.0	153.4	20 47.9 -55.0	153.4	20 47.9 -55.0	153.4	20 47.9 -55.0	153.4	27
28	26 07.8 -53.5	152.5	25 14.5 -53.7	152.7	24 21.2 -54.0	152.9	23 27.7 -54.2	153.1	22 34.1 -54.4	153.3	21 40.5 -54.7	153.5	20 46.7 -54.8	153.7	19 52.9 -55.1	153.8</td									

29°, 331° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	49 14.4 +45.6	132.1	48 33.8 +46.5	132.9	47 52.7 +47.2	133.7	47 10.9 +47.9	134.5	46 28.6 +48.5	135.3	45 45.7 +49.2	136.0	45 02.3 +49.8	136.7	44 18.4 +50.3	137.4	40	0	0	0	0	0	0	0	0
1	50 00.0 +45.2	131.1	49 20.3 +46.0	131.9	48 39.9 +46.7	132.8	47 58.8 +47.4	133.6	47 17.1 +48.2	134.4	46 34.9 +48.7	135.2	45 52.1 +49.4	135.9	45 08.7 +50.0	136.6	41	1	0	0	0	0	0	0	0
2	50 45.2 +44.6	130.0	50 06.3 +45.4	130.9	49 26.6 +46.2	131.8	48 46.2 +47.0	132.7	48 05.3 +47.7	133.5	47 23.6 +48.4	134.3	46 41.5 +49.0	135.1	45 58.7 +49.7	135.8	2	2	0	0	0	0	0	0	0
3	51 29.8 +44.0	129.0	50 51.7 +44.9	129.9	50 12.8 +45.7	130.8	49 33.2 +46.5	131.7	48 53.0 +47.2	132.6	48 12.0 +48.0	133.4	47 30.5 +48.6	134.2	46 48.4 +49.3	135.0	3	3	0	0	0	0	0	0	0
4	52 13.8 +43.4	127.9	51 36.6 +44.3	128.9	50 58.5 +45.2	129.8	50 19.7 +46.0	130.7	49 40.2 +46.8	131.6	49 00.0 +47.5	132.5	48 19.1 +48.3	133.3	47 37.7 +48.9	134.1	4	4	0	0	0	0	0	0	0
5	52 57.2 +42.6	126.7	52 20.9 +43.6	127.8	51 43.7 +44.6	128.8	51 05.7 +45.5	129.7	50 27.0 +46.3	130.7	49 47.5 +47.1	131.6	49 07.4 +47.8	132.4	48 26.6 +48.5	133.3	5	5	0	0	0	0	0	0	0
6	53 39.8 +42.0	125.5	53 04.5 +43.0	126.6	52 28.3 +43.9	127.7	51 51.2 +44.9	128.7	51 13.3 +45.7	129.7	50 34.6 +46.6	130.6	49 55.2 +47.3	131.5	49 15.1 +48.1	132.4	6	6	0	0	0	0	0	0	0
7	54 21.8 +41.2	124.3	53 47.5 +42.3	125.5	53 12.2 +43.3	126.5	52 36.1 +44.2	127.6	51 59.0 +45.2	128.6	51 21.2 +46.0	129.6	50 42.5 +46.9	130.5	50 03.2 +47.6	131.5	7	7	0	0	0	0	0	0	0
8	55 03.0 +40.4	123.1	54 29.8 +41.5	124.2	53 55.5 +42.6	125.4	53 20.3 +43.6	126.5	52 44.2 +44.6	127.5	52 07.2 +45.5	128.6	51 29.4 +46.3	129.6	50 50.8 +47.2	130.5	8	8	0	0	0	0	0	0	0
9	55 43.4 +39.4	121.8	55 11.3 +40.7	123.0	54 38.1 +41.9	124.2	54 03.9 +42.9	125.3	53 28.8 +43.9	126.4	52 52.7 +44.9	127.5	52 15.7 +45.8	128.5	51 38.0 +46.6	129.5	9	9	0	0	0	0	0	0	0
10	56 23.0 +38.6	120.4	55 52.0 +39.9	121.7	55 20.0 +41.0	122.9	54 46.8 +42.2	124.1	54 12.7 +43.2	125.3	53 37.6 +44.2	126.4	53 01.5 +45.2	127.5	52 24.6 +46.1	128.5	10	10	0	0	0	0	0	0	0
11	57 01.6 +37.7	119.0	56 31.9 +39.0	120.3	56 01.0 +40.3	121.6	55 29.0 +41.4	122.9	54 55.9 +42.5	124.1	54 21.8 +43.6	125.2	53 46.7 +44.6	126.4	53 10.7 +45.5	127.4	11	11	0	0	0	0	0	0	0
12	57 39.3 +36.7	117.6	57 10.9 +38.0	119.0	56 41.3 +39.3	120.3	56 10.4 +40.6	121.6	55 38.4 +41.7	122.8	55 05.4 +42.8	124.0	54 31.3 +43.8	125.2	53 56.2 +44.9	126.3	12	12	0	0	0	0	0	0	0
13	58 16.0 +35.6	116.1	57 48.9 +37.1	117.5	57 20.6 +38.4	118.9	56 51.0 +39.6	120.2	56 20.1 +40.9	121.6	55 48.2 +42.0	122.8	55 15.1 +43.2	124.0	54 41.1 +44.2	125.2	13	13	0	0	0	0	0	0	0
14	58 51.6 +34.4	114.5	58 26.0 +35.9	116.0	57 59.0 +37.3	117.5	57 30.6 +38.8	118.9	57 01.0 +40.1	120.2	56 30.2 +41.3	121.5	55 58.3 +42.4	122.8	55 25.3 +43.5	124.0	14	14	0	0	0	0	0	0	0
15	59 26.0 +33.3	112.9	59 01.9 +34.8	114.5	58 36.3 +36.3	116.0	58 09.4 +37.7	117.4	57 41.1 +39.0	118.8	57 11.5 +40.4	120.2	56 40.7 +41.6	121.5	56 08.8 +42.7	122.8	15	15	0	0	0	0	0	0	0
16	59 59.3 +31.9	111.3	59 36.7 +33.6	112.9	59 12.6 +35.2	114.4	58 47.1 +36.6	115.9	58 20.1 +38.1	117.4	57 51.9 +39.4	118.8	57 22.3 +40.7	120.2	56 51.5 +42.0	121.5	16	16	0	0	0	0	0	0	0
17	60 31.2 +30.6	109.6	60 10.3 +32.3	111.2	59 47.8 +33.9	112.8	59 23.7 +35.6	114.4	58 58.2 +37.1	115.9	58 31.3 +38.5	117.4	58 03.0 +39.8	118.8	57 33.5 +41.1	120.2	17	17	0	0	0	0	0	0	0
18	61 0.8 +29.2	107.8	60 42.6 +31.0	109.5	60 21.7 +32.7	111.2	59 59.3 +34.3	112.8	59 35.3 +35.9	114.4	59 09.8 +37.4	115.9	58 42.8 +38.9	117.4	58 14.6 +40.1	118.8	18	18	0	0	0	0	0	0	0
19	61 31.0 +27.7	106.0	61 13.6 +29.6	107.8	60 54.4 +31.4	109.5	60 33.6 +33.1	111.2	60 11.2 +34.7	112.8	59 47.2 +36.2	114.4	59 21.7 +37.7	115.9	58 54.7 +39.2	117.4	19	19	0	0	0	0	0	0	0
20	61 58.7 +26.1	104.1	61 43.2 +28.0	105.9	61 25.8 +29.9	107.7	61 06.7 +31.7	109.4	60 45.9 +33.4	111.1	60 23.4 +35.1	112.8	59 59.4 +36.7	114.4	59 33.9 +38.2	115.9	20	20	0	0	0	0	0	0	0
21	62 24.8 +24.5	102.2	62 11.2 +26.5	104.1	61 55.7 +28.4	105.9	61 38.4 +30.3	107.7	61 19.3 +32.1	109.4	60 58.5 +33.4	111.1	60 36.1 +35.5	112.8	60 12.1 +37.0	114.4	21	21	0	0	0	0	0	0	0
22	62 49.3 +22.8	100.2	62 37.7 +24.8	102.1	62 24.1 +26.9	104.0	62 08.7 +28.8	105.8	61 51.4 +30.7	107.6	61 32.4 +32.4	109.4	61 11.6 +34.2	111.1	60 49.1 +35.9	112.8	22	22	0	0	0	0	0	0	0
23	63 12.1 +20.9	98.2	63 02.5 +23.1	100.1	62 51.0 +25.2	102.1	62 37.5 +27.2	103.9	62 22.1 +29.2	105.8	62 04.8 +31.1	107.6	61 45.8 +32.9	109.4	61 25.0 +34.6	111.1	23	23	0	0	0	0	0	0	0
24	63 33.0 +19.1	96.1	63 25.6 +21.3	98.1	63 16.2 +23.4	100.0	63 04.7 +25.6	102.0	62 51.3 +27.5	103.9	62 35.9 +29.5	105.8	62 18.7 +31.4	107.6	61 59.6 +33.3	109.4	24	24	0	0	0	0	0	0	0
25	63 52.1 +17.2*	93.9	63 46.9 +19.4	96.0	63 39.6 +21.7	98.0	63 30.3 +23.8	100.0	63 18.8 +26.0	101.9	63 05.4 +28.0	103.9	62 50.1 +29.9	105.8	62 32.9 +31.8	107.6	25	25	0	0	0	0	0	0	0
26	64 09.3 +15.1*	91.8	64 06.3 +17.5*	93.8	64 01.3 +19.7	95.9	63 54.1 +21.9	97.9	63 44.8 +24.1	99.9	63 33.4 +26.3	101.9	63 20.0 +28.4	103.8	63 04.7 +30.3	105.8	26	26	0	0	0	0	0	0	0
27	64 24.4 +13.1*	89.5	64 23.8 +15.4*	91.6	64 21.0 +17.8*	93.7	64 16.0 +20.1	95.8	64 08.9 +22.4	97.8	63 59.7 +24.5	99.9	63 48.4 +26.7	101.9	63 35.0 +28.8	103.8	27	27	0	0	0	0	0	0	0
28	64 37.5 +10.9*	87.3	64 39.2 +13.4	89.4	64 38.8 +15.7*	91.5	64 36.1 +18.1*	93.6	64 31.3 +20.4*	95.7	64 24.2 +22.7	97.8	64 15.1 +24.9	99.8	64 03.8 +27.0	101.8	28	28	0	0	0	0	0	0	0
29	64 48.4 +8.8*	85.0	64 52.6 +11.2*	87.1	64 54.5 +13.7*	89.2	64 54.2 +16.0*	91.4	64 51.7 +18.4*	93.5	64 45.7 +18.4*	95.6	64 40.9 +20.6*	96.6	64 0.0 +23.0	99.8	29	29	0	0	0	0	0	0	0
30	64 57.2 +6.6*	82.6	65 03.8 +9.0*	84.8	65 08.2 +11.4*	86.9	65 10.3 +13.9*	89.1	65 10.1 +16.3*	91.2	65 07.7 +18.7*	93.4	65 03.0 +21.1	95.5	64 56.1 +23.4	97.7	30	30	0	0	0	0	0	0	0
31	65 03.8 +4.4*	80.3	65 12.8 +6.8*	82.4	65 19.6 +9.3*	84.6	65 24.2 +11.7*	86.7	65 26.4 +14.2*	88.9	65 24.6 +16.7*	91.1	65 24.1 +19.1*	93.3	65 19.5 +21.4*	95.5	31	31	0	0	0	0	0	0	0
32	65 08.2 +2.1*	77.9	65 19.6 +4.6*	80.0	65 28.9 +7.0*	82.2	65 35.9 +9.5*	84.4	65 40.6 +12.0*	86.6	65 43.1 +14.4*	88.8	65 43.2 +16.9*	91.0	65 40.9 +19.4*	93.2	32	32	0	0	0	0	0	0	0
33	65 10.3 -0.2*	75.5	65 24.2 +2.2*	77.6	65 35.9 +4.7*	80.2	65 35.9 +7.2*	82.4	65 45.4 +7.2*	84.2	65 52.6 +9.8*	86.4	66 00.1 +14.8*	88.7	66 00.3 +17.3*	90.9	33	33	0	0	0	0	0	0	0
34	65 46.0 -24.7*	73.2	65 21.4 -2.3*	75.0	65 41.9 -32.3	73.9	65 43.1 -37.2	75.7	65 45.7 -38.7	76.7	65 49.8 -42.7	77.6	66 19.8 +7.6*												

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 29°, 331°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.				
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z					
0	49 14.4 -46.2	132.1	48 33.8 -46.9	132.9	47 52.7 -47.6	133.7	47 10.9 -48.3	134.5	46 28.6 -48.9	135.3	45 45.7 -49.5	136.0	45 02.3 -50.1	136.7	44 18.4 -50.6	137.4	40 02.7 -51.9	140.9	40 49.1 -51.4	140.3	40 02.7 -51.9	140.9	40 27.8 -50.9	138.1	0				
1	48 28.2 -46.7	133.0	47 46.9 -47.4	133.8	47 05.1 -48.1	134.6	46 22.6 -48.6	135.4	45 39.7 -49.3	136.1	44 56.2 -49.8	136.8	44 12.2 -50.3	137.5	43 27.8 -50.9	138.1	43 57.7 -51.7	141.0	39 10.8 -52.0	141.5	39 06.0 -51.9	141.7	38 18.8 -52.3	142.2	1				
2	47 41.5 -47.1	134.0	46 59.5 -47.7	134.7	46 17.0 -48.4	135.5	45 34.0 -49.0	136.2	44 50.4 -49.6	136.9	44 06.4 -50.2	137.6	43 21.9 -50.7	138.2	42 36.9 -51.1	138.8	42 31.2 -50.6	138.9	41 45.8 -51.4	139.5	41 40.3 -51.2	139.7	40 54.4 -51.7	140.2	2				
3	46 54.4 -47.6	134.9	46 11.8 -48.2	135.6	45 28.6 -48.8	136.3	44 45.0 -49.4	137.0	43 00.8 -49.9	137.7	43 16.2 -50.4	138.3	42 31.2 -50.6	138.9	41 45.8 -51.4	139.5	40 54.4 -51.7	140.2	40 27.8 -50.9	138.1	40 01.4 -51.6	141.8	37 26.5 -52.5	142.8	8				
4	46 06.8 -47.9	135.8	45 23.6 -48.6	136.5	44 39.8 -49.1	137.2	43 55.6 -49.7	137.8	43 10.9 -50.2	138.5	42 25.8 -50.7	139.1	41 40.3 -51.2	139.7	40 54.4 -51.7	140.2	40 27.8 -50.9	138.1	40 01.4 -51.6	141.8	37 26.5 -52.5	142.3	37 22.0 -52.2	143.0	36 34.0 -52.7	143.4	9		
5	45 18.9 -48.3	136.6	44 35.0 -48.0	137.3	43 50.7 -49.4	138.0	43 05.9 -50.0	138.6	42 20.7 -50.5	139.2	41 35.1 -51.0	139.8	40 49.1 -51.4	140.3	40 02.7 -51.9	140.9	40 27.8 -50.9	138.1	40 01.4 -51.6	141.8	37 26.5 -52.5	142.8	37 22.0 -52.2	143.0	36 34.0 -52.7	143.4	10		
6	44 30.6 -48.7	137.5	43 46.1 -49.2	138.1	43 01.3 -49.8	138.7	42 15.9 -50.2	139.3	41 30.2 -50.7	139.9	40 44.1 -51.2	140.5	39 57.7 -51.7	141.0	39 10.8 -52.0	141.5	39 06.0 -51.9	141.7	38 18.8 -52.3	142.2	38 14.1 -52.1	142.3	37 26.5 -52.5	142.8	37 22.0 -52.2	143.0	36 34.0 -52.7	143.4	11
7	43 41.9 -49.0	138.3	42 56.9 -49.5	138.9	42 11.5 -50.1	139.5	41 25.7 -50.6	140.1	40 39.5 -51.0	140.6	39 52.9 -51.5	141.2	39 06.0 -51.9	141.7	38 14.1 -52.1	142.3	37 26.5 -52.5	142.8	37 22.0 -52.2	143.0	36 34.0 -52.7	143.4	12						
8	42 52.9 -49.3	139.1	42 07.4 -49.9	139.7	41 21.4 -50.3	140.2	40 35.1 -50.8	140.8	39 48.5 -51.3	141.3	39 01.4 -51.6	141.8	38 14.1 -52.1	142.3	37 26.5 -52.5	142.8	37 22.0 -52.2	143.0	36 34.0 -52.7	143.4	13								
9	42 03.6 -49.7	139.8	41 17.5 -50.1	140.4	40 31.1 -50.6	141.0	39 44.3 -51.0	141.5	38 57.2 -51.5	142.0	38 09.8 -51.9	142.5	37 22.0 -52.2	143.0	36 34.0 -52.7	143.4	36 34.0 -52.7	143.4	36 34.0 -52.7	143.4	36 34.0 -52.7	143.4	14						
10	41 13.9 -49.9	140.6	40 27.4 -50.4	141.1	39 40.5 -50.8	141.7	38 53.3 -51.3	142.2	38 05.7 -51.7	142.7	37 17.9 -52.1	143.1	36 29.8 -52.5	143.6	35 41.3 -52.8	144.0	35 41.3 -52.8	144.0	35 41.3 -52.8	144.0	35 41.3 -52.8	144.0	35 41.3 -52.8	144.0	10				
11	40 24.0 -50.2	141.3	39 37.0 -50.6	141.8	38 49.7 -51.1	142.3	38 02.0 -51.5	142.8	37 14.0 -51.9	143.3	36 25.8 -52.3	143.7	35 37.3 -52.7	144.2	34 48.5 -53.0	144.6	34 48.5 -53.0	144.6	34 48.5 -53.0	144.6	34 48.5 -53.0	144.6	34 48.5 -53.0	144.6	11				
12	39 33.8 -50.4	142.0	38 46.4 -50.9	142.5	37 58.6 -51.3	143.0	37 10.5 -51.7	143.5	36 22.1 -52.0	143.9	35 33.5 -52.4	144.3	34 44.6 -52.8	144.8	33 55.5 -53.1	145.1	33 55.5 -53.1	145.1	33 55.5 -53.1	145.1	33 55.5 -53.1	145.1	33 55.5 -53.1	145.1	12				
13	38 43.4 -50.7	142.7	37 55.5 -51.1	143.2	37 07.3 -51.5	143.7	36 18.8 -51.9	144.1	35 30.1 -52.3	144.5	34 41.1 -52.7	144.9	33 51.8 -52.9	145.3	33 02.4 -53.3	145.7	33 02.4 -53.3	145.7	33 02.4 -53.3	145.7	33 02.4 -53.3	145.7	33 02.4 -53.3	145.7	13				
14	37 52.7 -50.9	143.4	37 04.4 -51.4	143.9	36 15.8 -51.8	144.3	35 26.9 -52.1	144.7	34 37.8 -52.4	145.1	33 48.4 -52.7	145.5	32 58.9 -53.1	145.9	32 09.1 -53.4	146.2	32 09.1 -53.4	146.2	32 09.1 -53.4	146.2	32 09.1 -53.4	146.2	32 09.1 -53.4	146.2	14				
15	37 01.8 -51.2	144.1	36 13.0 -51.5	144.5	35 24.0 -51.9	144.9	34 34.8 -52.2	145.3	33 45.4 -52.6	145.7	32 55.7 -53.0	146.1	32 05.8 -53.3	146.4	31 15.7 -53.6	146.8	31 15.7 -53.6	146.8	31 15.7 -53.6	146.8	31 15.7 -53.6	146.8	31 15.7 -53.6	146.8	15				
16	36 10.6 -51.3	144.7	35 21.5 -51.7	145.1	34 32.1 -52.0	145.5	33 42.6 -52.5	145.9	32 52.8 -52.8	146.3	32 02.7 -53.0	146.6	31 12.5 -53.4	147.0	30 22.1 -53.7	147.3	30 22.1 -53.7	147.3	30 22.1 -53.7	147.3	30 22.1 -53.7	147.3	30 22.1 -53.7	147.3	16				
17	35 19.3 -51.6	145.4	34 29.8 -51.9	145.8	33 40.1 -52.3	146.1	32 50.1 -52.6	146.5	32 00.0 -52.9	146.9	31 09.7 -53.3	147.2	30 19.1 -53.5	147.5	29 28.4 -53.8	147.8	29 28.4 -53.8	147.8	29 28.4 -53.8	147.8	29 28.4 -53.8	147.8	29 28.4 -53.8	147.8	17				
18	34 27.7 -51.7	146.0	33 37.9 -52.1	146.4	32 47.8 -52.4	146.7	31 57.5 -52.7	147.1	31 07.1 -53.1	147.4	30 16.4 -53.3	147.7	29 25.6 -53.6	148.0	28 34.6 -53.9	148.3	28 34.6 -53.9	148.3	28 34.6 -53.9	148.3	28 34.6 -53.9	148.3	28 34.6 -53.9	148.3	18				
19	33 36.0 -51.9	146.6	32 45.8 -52.2	147.0	31 55.4 -52.6	147.3	31 04.8 -52.9	147.6	30 14.0 -53.1	148.0	29 23.1 -53.5	148.3	28 32.0 -53.8	148.5	27 40.7 -54.0	148.8	27 40.7 -54.0	148.8	27 40.7 -54.0	148.8	27 40.7 -54.0	148.8	27 40.7 -54.0	148.8	19				
20	32 44.1 -52.1	147.2	31 53.6 -52.4	147.5	31 02.8 -52.7	147.9	30 11.9 -53.0	148.2	29 20.9 -53.3	148.5	28 29.6 -53.5	148.8	27 38.2 -53.8	149.1	26 46.7 -54.1	149.3	26 46.7 -54.1	149.3	26 46.7 -54.1	149.3	26 46.7 -54.1	149.3	26 46.7 -54.1	149.3	20				
21	31 52.0 -52.2	147.8	31 01.2 -52.6	148.1	30 10.1 -52.8	148.4	29 18.9 -53.1	148.7	28 27.6 -53.5	149.0	27 36.1 -53.7	149.3	26 44.4 -54.0	149.5	25 52.6 -54.2	149.8	25 52.6 -54.2	149.8	25 52.6 -54.2	149.8	25 52.6 -54.2	149.8	25 52.6 -54.2	149.8	21				
22	30 59.8 -52.4	148.4	30 08.6 -52.7	148.7	29 17.3 -53.0	149.0	28 25.8 -53.3	149.3	27 34.1 -53.5	149.5	26 42.4 -53.8	149.8	25 50.4 -54.0	150.0	24 58.4 -54.3	150.3	24 58.4 -54.3	150.3	24 58.4 -54.3	150.3	24 58.4 -54.3	150.3	24 58.4 -54.3	150.3	22				
23	30 07.4 -52.5	148.9	29 15.9 -52.8	149.2	28 24.3 -53.1	149.5	27 32.5 -53.4	149.8	26 40.6 -53.6	150.0	25 48.6 -53.9	150.3	24 56.4 -54.1	150.5	23 09.7 -55.0	151.0	23 09.7 -55.0	151.0	23 09.7 -55.0	151.0	23 09.7 -55.0	151.0	23 09.7 -55.0	151.0	23				
24	29 14.9 -52.7	149.5	28 23.1 -52.9	149.8	27 31.2 -53.2	150.0	26 39.1 -53.4	150.3	25 47.0 -53.8	150.5	24 54.7 -54.0	150.8	23 52.0 -54.2	151.0	22 49.4 -54.6	152.8	22 49.4 -54.6	152.8	22 49.4 -54.6	152.8	22 49.4 -54.6	152.8	22 49.4 -54.6	152.8	22				
25	28 22.2 -52.8	150.0	27 30.2 -53.1	150.3	26 38.0 -53.4	150.6	25 45.7 -53.6	150.8	24 53.0 -53.8	151.0	23 40.7 -54.1	151.2	22 38.0 -54.3	151.5	21 35.7 -54.6	151.8	21 35.7 -54.6	151.8	21 35.7 -54.6	151.8	21 35.7 -54.6	151.8	21 35.7 -54.6	151.8	21				
26	27 29.4 -52.9	150.6	26 37.1 -53.2	150.8	25 44.6 -53.4	151.1	24 52.1 -53.7	151.3	23 59.4 -53.9	151.5	22 56.4 -54.2	151.7	21 33.7 -54.4	151.9	20 20.7 -54.6	152.1	20 20.7 -54.6	152.1	20 20.7 -54.6	152.1	20 20.7 -54.6	152.1	20 20.7 -54.6	152.1	20				
27	26 36.5 -53.0	151.1	25 43.9 -53.3	151.3	24 51.2 -53.5	151.6	23 58.4 -53.8	151.8	22 55.0 -54.0	152.0	21 42.4 -54.2	152.2	20 12.4 -54.5	152.4	19 19.3 -54.8	152.6	19 19.3 -54.8	152.6	19 19.3 -54.8	152.6	19 19.3 -54.8	152.6	19 19.3 -54.8	152.6	19				
28	25 35.6 -53.1	151.6	24 42.4 -53.4	151.8	23 49.7 -53.7	152.0	22 56.3 -54.0	152.2	21 53.9 -54.2	152.4	20 20.8 -54.5	152.6	19 0.0 -55.0	1															

30°, 330° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	48	35.4	+45.1	130.9	47	55.8	+45.9	131.7	47	15.6	+46.6	132.5	46	34.7	+47.3	133.3	45	53.2	+48.0	134.1	45	11.2	+48.6	134.8	44	28.7	+49.2	135.5	43	45.6	+49.8	136.2	0
1	49	20.5	+44.6	129.9	48	41.7	+45.4	130.8	48	02.2	+46.1	131.6	47	22.0	+46.9	132.4	46	41.2	+47.6	133.2	45	59.8	+48.3	134.0	45	17.9	+48.9	134.7	44	35.4	+49.6	135.4	1
2	50	05.1	+44.0	128.9	49	27.1	+44.8	129.8	48	48.3	+45.7	130.6	48	08.9	+46.4	131.5	47	28.8	+47.2	132.3	46	48.1	+47.9	133.1	46	06.8	+48.6	133.9	45	25.0	+49.1	134.6	2
3	50	49.1	+43.3	127.8	50	11.9	+44.3	128.7	49	34.0	+45.1	129.7	48	55.3	+46.0	130.5	48	16.0	+46.7	131.4	47	36.0	+47.4	132.2	46	55.4	+48.1	133.0	46	14.1	+48.8	133.8	3
4	51	32.4	+42.8	126.7	50	56.2	+43.7	127.7	50	19.1	+44.6	128.6	49	41.3	+45.4	129.6	49	02.7	+46.2	130.5	48	23.4	+47.0	131.3	47	43.5	+47.7	132.1	47	02.9	+48.4	132.9	4
5	52	15.2	+41.2	125.5	51	39.9	+43.0	126.6	51	03.7	+44.0	127.6	50	26.7	+44.9	128.5	49	48.9	+45.8	129.5	49	10.4	+46.6	130.4	48	31.2	+47.3	131.2	47	51.3	+48.1	132.1	5
6	52	57.3	+41.2	124.4	52	22.9	+42.4	125.4	51	47.7	+43.3	126.5	51	11.6	+44.3	127.5	50	34.7	+45.1	128.5	49	57.0	+46.0	129.4	49	18.5	+46.8	130.3	48	39.4	+47.5	131.2	6
7	53	38.6	+40.6	123.2	53	05.3	+41.7	124.3	52	31.0	+42.7	125.4	51	55.9	+43.6	126.4	51	19.8	+44.6	127.4	50	43.0	+45.5	128.4	50	05.3	+46.3	129.3	49	26.9	+47.1	130.2	7
8	54	19.2	+39.8	121.9	53	47.0	+40.9	123.1	53	13.7	+42.0	124.2	52	39.5	+43.1	125.3	52	04.4	+44.0	126.3	51	28.5	+44.9	127.4	50	51.6	+45.8	128.3	50	14.0	+46.7	129.3	8
9	54	59.0	+38.3	120.6	54	27.9	+40.1	121.8	53	55.7	+41.3	123.0	52	22.6	+42.3	124.1	52	48.4	+43.4	125.2	51	13.4	+44.3	126.3	51	37.4	+45.3	127.3	51	00.7	+46.1	128.3	9
10	55	37.9	+38.1	119.3	55	08.0	+39.3	120.5	54	37.0	+40.4	121.7	54	04.9	+41.6	122.9	53	31.8	+42.6	124.1	52	57.7	+43.6	125.2	52	22.7	+44.6	126.2	51	46.8	+45.5	127.3	10
11	56	16.0	+37.0	117.9	55	47.3	+38.4	119.2	55	17.4	+39.7	120.5	54	46.5	+40.8	121.7	54	14.4	+41.9	122.9	53	41.3	+43.0	124.0	53	07.3	+44.0	125.1	52	32.3	+45.0	126.2	11
12	56	53.0	+36.1	116.5	56	25.7	+37.4	117.8	55	57.1	+38.7	119.1	55	27.3	+39.9	120.4	54	56.3	+41.2	121.6	54	24.3	+42.3	122.8	53	51.3	+43.3	124.0	53	17.3	+44.3	125.1	12
13	57	29.1	+35.0	115.0	57	03.1	+36.4	116.4	56	35.8	+37.8	117.8	56	07.2	+39.1	119.1	55	37.5	+40.3	120.4	55	06.6	+41.5	121.6	54	34.6	+42.6	122.8	54	01.6	+43.7	124.0	13
14	58	04.1	+33.9	113.5	57	39.5	+35.4	114.9	57	13.6	+36.8	116.3	56	46.3	+38.2	117.7	56	17.8	+39.4	119.0	55	48.1	+40.7	120.3	55	17.2	+41.9	121.6	54	45.3	+42.9	122.8	14
15	58	38.0	+32.7	111.9	58	14.9	+34.2	113.4	57	50.4	+35.7	114.9	57	24.5	+37.1	116.3	56	57.2	+38.6	117.7	56	28.8	+39.8	119.0	55	59.1	+41.0	120.3	55	28.2	+42.2	121.6	15
16	59	10.7	+31.4	110.3	58	49.1	+33.1	111.8	58	26.1	+34.6	113.3	58	01.6	+36.1	114.8	57	35.8	+37.5	116.2	57	08.6	+38.4	117.6	56	40.1	+40.2	119.0	56	10.4	+41.4	120.3	16
17	59	42.1	+30.1	108.6	59	22.2	+31.8	110.2	59	00.7	+33.4	111.8	58	37.7	+35.0	113.3	58	13.3	+36.5	114.8	57	47.4	+37.9	116.2	57	20.3	+39.2	117.6	56	51.8	+40.5	119.0	17
18	60	12.2	+28.8	106.9	59	54.0	+30.5	108.5	59	34.1	+32.2	110.1	59	12.7	+33.8	111.7	58	49.8	+35.3	113.3	58	25.3	+36.8	114.8	57	59.5	+38.3	116.2	57	32.3	+39.7	117.6	18
19	60	41.0	+27.2	105.1	60	24.5	+29.1	106.8	60	06.3	+30.9	108.5	59	46.5	+32.6	110.1	59	25.1	+34.2	111.7	59	02.2	+35.7	113.2	58	37.8	+37.2	114.7	58	12.0	+38.6	116.2	19
20	61	08.2	+25.8	103.3	60	53.6	+27.6	105.0	60	37.2	+29.5	106.7	60	19.1	+31.2	108.4	59	59.3	+32.9	110.1	59	37.9	+34.6	111.7	59	15.0	+36.2	113.2	58	50.6	+37.7	114.8	20
21	61	34.0	+24.1	101.4	61	21.2	+26.1	103.2	61	06.7	+28.0	104.9	60	50.3	+29.8	106.7	60	32.2	+31.7	108.4	60	12.5	+33.3	110.0	59	51.2	+34.9	111.7	58	28.3	+36.5	113.2	21
22	61	58.1	+22.5	99.4	61	47.3	+24.5	101.3	61	34.7	+26.4	103.1	61	20.2	+28.4	104.9	61	03.9	+30.2	106.6	60	45.8	+32.1	108.3	60	26.1	+33.8	110.0	60	04.8	+35.3	111.7	22
23	62	20.6	+20.7	97.5	62	11.8	+22.9	99.3	62	01.1	+24.9	101.2	61	48.6	+26.8	103.0	61	34.1	+28.8	104.8	61	17.9	+30.6	106.6	60	59.9	+32.4	108.3	60	40.1	+34.2	110.0	23
24	62	41.3	+19.0	95.4	62	34.7	+21.0	97.3	62	26.0	+23.2	99.2	62	15.4	+25.2	101.1	62	02.9	+27.2	103.0	61	48.5	+29.1	104.8	61	32.3	+31.0	106.6	61	14.3	+32.8	108.3	24
25	63	00.3	+17.0	93.3	62	55.7	+19.3	95.3	62	49.2	+21.4	97.2	62	40.6	+23.6	99.2	62	30.1	+25.6	101.1	62	17.6	+27.6	102.9	62	03.3	+29.5	104.8	61	47.1	+31.4	106.6	25
26	63	17.3	+15.1	91.2	63	15.0	+17.4	93.2	63	10.6	+19.6	95.2	63	04.2	+21.7	97.1	62	55.7	+23.9	99.1	62	45.2	+26.0	101.0	62	32.8	+28.0	102.9	62	18.5	+29.9	104.8	26
27	63	32.4	+13.2	89.1	63	32.4	+15.4	91.1	63	30.2	+17.7	93.1	63	25.9	+20.0	95.1	63	19.6	+22.1	97.1	63	11.2	+24.3	99.0	63	00.8	+26.4	101.0	62	48.4	+28.4	102.9	27
28	63	45.6	+11.1*	86.9	63	47.8	+13.4	88.9	63	47.9	+15.7	90.9	63	45.9	+18.0	92.9	63	41.7	+20.3	95.0	63	35.5	+22.5	97.0	63	27.2	+24.6	99.0	63	16.8	+26.8	100.9	28
29	63	56.7	+9.0*	84.6	64	01.2	+11.4	86.7	64	03.6	+13.8	88.7	64	03.9	+16.0	90.8	64	02.0	+18.4	92.8	64	58.0	+20.6	94.9	63	51.8	+22.9	96.9	63	43.6	+25.0	98.9	29
30	64	18.6	-3.9*	70.9	64	37.3	-1.7	72.9	64	53.9	+0.7*	74.9	65	08.5	+3.1*	77.0	65	20.9	+5.6*	79.1	65	31.2	+7.9*	81.3	65	39.1	+10.5*	83.4	65	44.8	+13.0*	85.7	30
31	64	14.7	-6.1*	68.6	64	35.6	-3.8*	70.5	64	54.6	-1.5*	72.5	65	11.6	+0.8*	74.6	65	26.5	+3.2*	76.7	65	39.1	+5.7*	78.9	65	49.6	+8.2*	81.0	65	57.8	+10.7*	83.3	31
32	64	08.6	-8.2*	66.3	64	31.8	-6.1*	68.2	64	53.1	-3.8*	70.2	65	12.4	-1.4*	72.2	65	29.7	+1.0*	74.3	65	44.8	+3.4*	76.4	65	57.8	+5.9*	78.6	66</				

LATITUDE CONTRARY NAME TO DECLINATION **L.H.A. 30°, 330°**

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.		
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z			
0	48 35.4 -45.6	130.9	47 55.8 -46.3	131.7	47 15.6 -47.1	132.5	46 34.7 -47.8	133.3	45 53.2 -48.4	134.1	45 11.2 -49.0	134.8	44 28.7 -49.6	135.5	43 45.6 -50.1	136.2	42 55.5 -50.5	136.9	42 55.5 -50.5	136.9	42 55.5 -50.5	136.9	41 50.0 -50.5	137.7	40 20.4 -52.6	139.8	0
1	47 49.8 -46.1	131.9	47 09.5 -46.8	132.7	46 28.5 -47.5	133.5	45 46.9 -48.1	134.2	45 04.8 -48.7	134.9	44 22.2 -49.3	135.6	43 39.1 -49.9	136.3	42 49.2 -50.2	137.1	42 05.0 -50.7	137.7	42 05.0 -50.7	137.7	42 05.0 -50.7	137.7	41 43.0 -51.0	138.4	3		
2	47 03.7 -46.5	132.8	46 22.7 -47.3	133.6	45 41.0 -47.9	134.3	44 58.8 -48.5	135.1	44 16.1 -49.1	135.7	43 32.9 -49.7	136.4	42 49.2 -50.3	137.2	41 59.0 -50.5	137.8	41 14.3 -51.0	138.4	40 23.3 -51.2	139.1	40 23.3 -51.2	139.1	40 23.3 -51.2	139.1	40 23.3 -51.2	139.1	4
3	46 17.2 -47.0	133.7	45 35.4 -47.6	134.5	44 53.1 -48.2	135.2	44 10.3 -48.8	135.9	43 27.0 -49.4	136.5	42 43.2 -50.0	137.2	41 59.0 -50.5	137.8	41 14.3 -51.0	138.4	40 23.3 -51.2	139.1	40 23.3 -51.2	139.1	40 23.3 -51.2	139.1	40 23.3 -51.2	139.1	4		
4	45 30.2 -47.4	134.6	44 47.8 -48.0	135.3	44 04.9 -48.6	136.0	43 21.5 -49.2	136.7	42 37.6 -49.8	137.3	41 53.2 -50.2	137.9	41 08.5 -50.8	138.5	40 23.3 -51.2	139.1	40 23.3 -51.2	139.1	40 23.3 -51.2	139.1	40 23.3 -51.2	139.1	40 23.3 -51.2	139.1	4		
5	44 42.8 -47.7	135.5	43 59.8 -48.4	136.2	43 16.3 -49.0	136.8	42 32.3 -49.5	137.5	41 47.8 -50.0	138.1	41 03.0 -50.5	138.7	40 17.7 -50.8	139.2	39 32.1 -51.4	139.8	39 26.8 -51.3	139.9	38 40.7 -51.7	140.4	38 21.7 -51.0	140.1	38 35.5 -51.4	140.6	37 49.0 -51.9	141.1	7
6	43 55.1 -48.2	136.3	43 11.4 -48.7	137.0	42 27.3 -49.2	137.6	41 42.8 -49.8	138.2	40 57.8 -50.3	138.8	40 12.5 -50.8	139.4	39 26.8 -51.3	139.9	38 40.7 -51.7	140.4	38 21.7 -51.0	140.1	38 35.5 -51.4	140.6	37 49.0 -51.9	141.1	8				
7	43 06.9 -48.4	137.2	42 22.7 -49.0	137.8	41 38.1 -49.6	138.4	40 53.0 -50.1	139.0	40 07.5 -50.5	139.5	39 21.7 -51.0	140.1	38 30.7 -51.2	140.7	37 44.1 -51.7	141.2	36 57.1 -52.0	141.7	36 57.1 -52.0	141.7	36 57.1 -52.0	141.7	36 57.1 -52.0	141.7	8		
8	42 18.5 -48.8	138.0	41 33.7 -49.3	138.6	40 48.5 -49.8	139.1	40 02.9 -50.3	139.7	39 17.0 -50.8	140.2	38 30.7 -51.2	140.7	37 44.1 -51.7	141.2	36 57.1 -52.0	141.7	36 57.1 -52.0	141.7	36 57.1 -52.0	141.7	36 57.1 -52.0	141.7	36 57.1 -52.0	141.7	9		
9	41 29.7 -49.1	138.8	40 44.4 -49.7	139.3	39 58.7 -50.1	139.9	39 12.6 -50.6	140.4	38 26.2 -51.0	140.9	37 39.5 -51.5	141.4	36 52.4 -51.8	141.9	36 05.1 -52.3	142.3	36 52.4 -51.8	141.9	36 05.1 -52.3	142.3	36 52.4 -51.8	141.9	36 05.1 -52.3	142.3	9		
10	40 40.6 -49.4	139.5	39 54.7 -49.9	140.1	39 08.6 -50.4	140.6	38 22.0 -50.8	141.1	37 35.2 -51.3	141.6	36 48.0 -51.6	142.1	36 00.6 -52.1	142.5	35 12.8 -52.4	142.9	35 12.8 -52.4	142.9	35 12.8 -52.4	142.9	35 12.8 -52.4	142.9	35 12.8 -52.4	142.9	10		
11	39 51.2 -49.7	140.3	39 04.8 -50.1	140.8	38 18.2 -50.6	141.3	37 31.2 -51.0	141.8	36 43.9 -51.4	142.2	35 56.4 -51.9	142.7	35 08.5 -52.2	143.1	34 20.4 -52.6	143.5	34 20.4 -52.6	143.5	34 20.4 -52.6	143.5	34 20.4 -52.6	143.5	34 20.4 -52.6	143.5	11		
12	39 01.5 -50.0	141.0	38 14.7 -50.4	141.5	37 27.6 -50.8	142.0	36 40.2 -51.3	142.4	35 52.5 -51.7	142.9	35 04.5 -52.0	143.3	34 16.3 -52.4	143.7	33 27.8 -52.8	144.1	33 27.8 -52.8	144.1	33 27.8 -52.8	144.1	33 27.8 -52.8	144.1	33 27.8 -52.8	144.1	12		
13	38 11.5 -50.2	141.7	37 24.3 -50.6	142.2	36 36.8 -51.1	142.6	35 48.9 -51.4	143.1	35 00.8 -51.8	143.5	34 12.5 -52.2	143.9	33 23.9 -52.6	144.3	32 35.0 -52.9	144.7	32 35.0 -52.9	144.7	32 35.0 -52.9	144.7	32 35.0 -52.9	144.7	32 35.0 -52.9	144.7	13		
14	37 21.3 -50.4	142.4	36 33.7 -50.8	142.8	35 45.7 -51.3	143.3	34 57.5 -51.7	143.7	33 09.0 -52.0	144.1	33 20.3 -52.4	144.5	32 10.4 -52.7	144.9	31 42.1 -53.0	145.2	31 42.1 -53.0	145.2	31 42.1 -53.0	145.2	31 42.1 -53.0	145.2	31 42.1 -53.0	145.2	14		
15	36 30.9 -50.7	143.1	35 42.8 -51.1	143.5	34 54.4 -51.4	143.9	34 05.8 -51.8	144.3	33 17.0 -52.2	144.7	32 27.9 -52.5	145.1	31 38.6 -52.9	145.4	30 49.1 -53.2	145.8	30 49.1 -53.2	145.8	30 49.1 -53.2	145.8	30 49.1 -53.2	145.8	30 49.1 -53.2	145.8	15		
16	35 40.2 -50.8	143.7	34 51.7 -51.2	144.1	34 03.0 -51.6	144.5	33 14.0 -52.0	144.9	32 24.8 -52.4	145.3	31 35.4 -52.7	145.7	30 45.7 -53.0	146.0	29 55.9 -53.3	146.3	29 55.9 -53.3	146.3	29 55.9 -53.3	146.3	29 55.9 -53.3	146.3	29 55.9 -53.3	146.3	16		
17	34 49.4 -51.1	144.4	34 00.5 -51.5	144.8	33 11.4 -51.9	145.2	32 22.0 -52.2	145.5	31 32.4 -52.5	145.9	30 42.7 -52.9	146.2	29 52.7 -53.1	146.5	29 02.6 -53.5	146.8	29 02.6 -53.5	146.8	29 02.6 -53.5	146.8	29 02.6 -53.5	146.8	29 02.6 -53.5	146.8	17		
18	33 58.3 -51.3	145.0	33 09.0 -51.6	145.4	32 19.5 -51.9	145.8	31 29.8 -52.3	146.1	30 39.9 -52.6	146.4	29 49.8 -52.9	146.8	28 59.6 -53.3	147.1	28 09.1 -53.5	147.4	28 09.1 -53.5	147.4	28 09.1 -53.5	147.4	28 09.1 -53.5	147.4	28 09.1 -53.5	147.4	18		
19	33 07.0 -51.4	145.6	32 17.4 -51.8	146.0	31 27.6 -52.2	146.3	30 37.5 -52.4	146.7	29 47.3 -52.8	147.0	28 56.9 -53.1	147.3	28 06.3 -53.4	147.6	27 15.6 -53.7	147.9	27 15.6 -53.7	147.9	27 15.6 -53.7	147.9	27 15.6 -53.7	147.9	27 15.6 -53.7	147.9	19		
20	32 15.6 -51.6	146.2	31 25.6 -52.0	146.6	30 35.4 -52.3	146.9	29 45.1 -52.6	147.2	28 54.5 -52.9	147.5	28 03.8 -53.2	147.8	27 12.9 -53.4	148.1	26 21.9 -53.7	148.4	26 21.9 -53.7	148.4	26 21.9 -53.7	148.4	26 21.9 -53.7	148.4	26 21.9 -53.7	148.4	20		
21	31 24.0 -51.8	146.8	30 33.6 -52.1	147.2	29 43.1 -52.4	147.5	28 52.5 -52.8	147.8	28 01.6 -53.0	148.1	27 10.6 -53.3	148.4	26 19.5 -53.6	148.6	25 28.2 -53.9	148.9	25 28.2 -53.9	148.9	25 28.2 -53.9	148.9	25 28.2 -53.9	148.9	25 28.2 -53.9	148.9	21		
22	30 32.2 -52.0	147.4	29 41.5 -52.2	147.7	28 50.7 -52.6	148.0	27 59.7 -52.9	148.3	27 08.6 -53.2	148.6	26 17.3 -53.4	148.9	25 25.9 -53.7	149.1	24 34.3 -53.9	149.4	24 34.3 -53.9	149.4	24 34.3 -53.9	149.4	24 34.3 -53.9	149.4	24 34.3 -53.9	149.4	22		
23	29 40.2 -52.1	148.0	28 49.3 -52.4	148.3	27 58.1 -52.7	148.6	27 06.8 -52.9	148.9	26 15.4 -53.2	149.1	25 23.9 -53.6	149.4	24 32.2 -53.8	149.6	23 40.4 -54.1	149.8	23 40.4 -54.1	149.8	23 40.4 -54.1	149.8	23 40.4 -54.1	149.8	23 40.4 -54.1	149.8	23		
24	28 48.1 -52.2	148.6	27 56.9 -52.6	148.9	26 20.5 -53.0	150.0	25 33.5 -53.2	151.2	24 40.2 -53.4	151.6	23 47.3 -53.7	152.0	22 55.3 -54.0	152.4	21 46.3 -54.2	152.6	21 46.3 -54.2	152.6	21 46.3 -54.2	152.6	21 46.3 -54.2	152.6	21 46.3 -54.2	152.6	21		
25	27 44.8 -52.4	149.1	27 04.3 -52.6	149.4	26 12.6 -52.9	149.7	25 20.8 -53.2	149.9	24 28.8 -53.5	150.1	23 36.7 -53.7	150.4	22 44.5 -54.0	150.6	21 52.2 -54.2	150.8	21 52.2 -54.2	150.8	21 52.2 -54.2	150.8	21 52.2 -54.2	150.8	21 52.2 -54.2	150.8	25		
26	27 03.5 -52.4	149.7	26 11.7 -52.8	149.9	25 19.7 -53.1	150.2	24 27.6 -53.3	150.4	23 35.3 -53.6	150.6	22 43.0 -53.8	150.8	21 50.5 -54.0	151.0	20 58.0 -54.2	151.2	20 58.0 -54.2	151.2	20 58.0 -54.2	151.2	20 58.0 -54.2	151.2	20 58.0 -54.2	151.2	26		
27	26 11.1 -52.7	150.2	25 18.9 -52.9	150.5	24 26.6 -53.1	150.7	23 34.3 -53.4	150.9	22 41.8 -53.7	151.1	21 49.2 -53.9	151.3	20 56.5 -54.1	151.5	19 03.7 -54.3	151.7	19 03.7 -54.3	151.7	19 03.7 -54.3	151.7	19 03.7 -54.3	151.7	19 03.7 -54.3	151.7	27		
28	25 18.4 -52.7	150.8	24 09.2 -54.0	151.1	23 10.9 -54.3	151.3	22 47.2 -54.4	151.6	21 47.8 -54.3	151.9	20 52.9 -5																

31°, 329° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	47	55.8	+44.5	129.8	47	17.1	+45.3	130.6	46	37.7	+46.1	131.4	45	57.7	+46.8	132.2	45	17.1	+47.5	132.9	44	36.0	+48.1	133.7	43	54.3	+48.8	134.4	43	12.1	+49.4	135.0	0
1	48	40.3	+44.0	128.8	48	02.4	+44.8	129.6	47	23.8	+45.6	130.5	46	44.5	+46.4	131.3	46	04.6	+47.1	132.1	45	24.1	+47.8	132.8	44	43.1	+48.4	133.6	44	01.5	+49.0	134.3	1
2	49	24.3	+43.4	127.7	48	47.2	+44.3	128.6	48	09.4	+45.1	129.5	47	30.9	+45.9	130.4	46	51.7	+46.6	131.2	46	11.9	+47.4	132.0	45	31.5	+48.0	132.7	44	50.5	+48.7	133.5	2
3	50	07.7	+42.8	126.6	49	31.5	+43.7	127.6	48	54.5	+44.6	128.5	48	16.8	+45.4	129.4	47	38.3	+46.2	130.2	46	59.3	+46.9	131.1	46	19.5	+47.7	131.9	45	39.2	+48.3	132.6	3
4	50	50.5	+42.1	125.5	50	15.2	+43.1	126.5	49	39.1	+44.0	127.5	49	02.2	+44.8	128.4	48	24.5	+45.7	129.3	47	46.2	+46.5	130.1	47	07.2	+47.2	131.0	46	27.5	+47.9	131.8	4
5	51	32.6	+41.5	124.4	50	58.3	+42.4	125.4	50	23.1	+43.4	126.4	49	47.0	+44.3	127.4	49	10.2	+45.2	128.3	48	32.7	+46.0	129.2	47	54.4	+46.8	130.1	47	15.4	+47.6	130.9	5
6	52	14.1	+40.7	123.2	51	40.7	+41.8	124.3	51	06.5	+42.7	125.3	50	31.3	+43.8	126.3	49	55.4	+44.6	127.3	49	18.7	+45.4	128.2	48	41.2	+46.3	129.1	48	03.0	+47.0	130.0	6
7	52	54.8	+40.0	122.0	52	22.5	+41.1	123.1	51	49.2	+42.2	124.2	51	15.1	+43.1	125.2	50	40.0	+44.1	126.2	50	04.1	+45.0	127.2	49	27.5	+45.8	128.1	48	50.0	+46.6	129.0	7
8	53	34.8	+39.2	120.8	53	03.6	+40.3	121.9	52	31.4	+41.4	123.0	51	58.2	+42.4	124.1	50	24.1	+43.4	125.2	50	49.1	+44.4	126.2	50	13.3	+45.2	127.1	49	36.6	+46.1	128.1	8
9	54	14.0	+38.4	119.5	53	43.9	+39.6	120.7	53	12.8	+40.6	121.8	52	40.6	+41.8	123.0	52	07.5	+42.8	124.0	51	33.5	+43.7	125.1	50	58.5	+44.7	126.1	50	22.7	+45.6	127.1	9
10	54	52.4	+37.4	118.2	54	23.5	+38.6	119.4	53	53.4	+39.9	120.6	53	22.4	+41.0	121.8	52	50.3	+42.1	122.9	52	17.2	+43.1	124.0	51	43.2	+44.1	125.0	51	08.3	+45.1	126.1	10
11	55	29.8	+36.5	116.8	55	02.1	+37.9	118.1	54	33.3	+39.1	119.3	54	03.4	+40.2	120.5	53	32.4	+41.3	121.7	53	00.3	+42.5	122.8	52	27.3	+43.5	123.9	51	53.4	+44.4	125.0	11
12	56	06.3	+35.5	115.4	55	40.0	+36.8	116.7	55	12.4	+38.1	118.0	54	43.6	+39.4	119.3	54	13.7	+40.6	120.5	53	42.8	+41.7	121.7	53	10.8	+42.7	122.8	52	37.8	+43.8	123.9	12
13	56	41.8	+34.5	113.9	56	16.8	+35.9	115.3	55	50.5	+37.3	116.6	55	23.0	+38.5	117.9	54	53.3	+39.8	119.2	54	24.5	+40.5	120.4	53	53.5	+42.1	121.6	53	21.6	+43.1	122.8	13
14	57	16.3	+33.3	112.4	56	52.7	+34.8	113.9	56	27.8	+36.2	115.2	56	01.5	+37.6	116.6	55	34.1	+38.9	117.9	55	05.4	+40.1	119.2	54	04.7	+42.4	121.6	54				
15	57	49.6	+32.2	110.9	57	27.5	+33.7	112.4	57	04.0	+35.2	113.8	56	39.1	+36.6	115.2	56	13.0	+37.9	116.5	55	45.5	+39.3	117.9	55	16.9	+40.5	119.1	54	47.1	+41.7	120.4	15
16	58	21.8	+30.9	109.3	58	01.2	+32.6	110.8	57	39.2	+34.1	112.3	57	15.7	+35.6	113.7	56	50.9	+37.0	115.1	56	24.8	+38.3	116.5	55	57.4	+39.6	117.8	55	28.8	+40.9	119.1	16
17	58	52.7	+29.7	107.6	58	33.8	+31.3	109.2	58	13.3	+32.9	110.7	57	51.3	+34.5	112.2	57	27.9	+36.0	113.7	57	03.1	+37.4	115.1	56	37.0	+38.8	116.5	56	09.7	+40.0	117.8	17
18	59	22.4	+28.3	105.9	59	05.1	+30.0	107.6	58	46.2	+31.7	109.1	58	25.8	+33.3	110.7	58	03.9	+34.8	112.2	57	40.5	+36.3	113.6	57	15.8	+37.7	115.1	56	49.7	+39.1	116.5	18
19	59	50.7	+26.9	104.2	59	35.1	+28.7	105.9	59	17.9	+30.4	107.5	58	59.1	+32.1	109.1	58	38.7	+33.7	110.6	58	16.8	+35.2	112.1	57	53.5	+36.7	113.6	57	28.8	+38.1	115.1	19
20	60	17.6	+25.4	102.4	60	03.8	+27.3	104.1	59	48.3	+29.1	105.8	59	31.2	+30.8	107.4	59	12.4	+32.5	109.0	58	52.1	+34.1	110.6	58	30.2	+35.7	112.1	58	06.9	+37.1	113.6	20
21	60	43.0	+23.6	100.6	60	31.1	+25.7	102.3	60	17.4	+27.6	104.0	60	02.0	+29.4	105.7	59	44.9	+31.2	107.4	59	26.2	+32.8	109.0	59	05.9	+34.5	110.6	58	44.0	+36.1	112.1	21
22	61	06.8	+22.2	98.7	60	56.8	+24.2	100.5	60	45.0	+26.2	102.2	60	31.4	+28.0	104.0	60	16.1	+29.8	105.7	59	59.1	+31.5	107.3	59	40.4	+33.2	109.0	59	20.1	+34.9	110.6	22
23	61	29.0	+20.6	96.8	61	21.0	+22.6	98.6	61	11.2	+24.5	100.4	60	59.4	+26.6	102.1	60	45.9	+28.4	103.9	60	30.6	+30.3	105.6	60	13.6	+32.0	107.3	59	55.0	+33.6	109.0	23
24	61	49.6	+18.8	94.8	61	43.6	+20.9	96.9	61	35.7	+23.0	98.5	62	55.6	+18.0	92.3	62	52.2	+20.6	94.3	62	46.7	+22.3	96.2	62	39.2	+24.4	98.1	62	29.7	+26.5	100.0	24
25	62	08.4	+17.0	92.8	62	04.5	+19.1	94.6	61	58.7	+21.2	96.5	61	50.9	+23.3	98.4	61	41.2	+25.3	100.2	61	29.6	+27.3	102.0	61	01.0	+31.0	105.6	25				
26	62	25.4	+15.1	90.7	62	23.6	+17.3	92.6	62	19.9	+19.5	94.5	62	14.2	+21.6	96.4	62	06.5	+23.7	98.3	61	56.9	+25.7	100.1	61	45.4	+27.7	102.0	61	32.0	+29.6	103.8	26
27	62	40.5	+13.2	88.6	62	40.9	+15.5	90.5	62	39.4	+17.6	92.5	62	35.8	+19.8	94.4	62	30.2	+22.0	96.3	62	22.6	+24.1	98.2	62	13.1	+26.1	100.1	62	01.6	+28.1	101.9	27
28	62	53.7	+11.3*	86.5	62	56.4	+13.4	88.4	62	57.0	+15.8	90.4	62	55.6	+18.0	92.3	62	52.2	+20.1	94.3	62	46.7	+22.3	96.2	62	29.7	+26.5	100.0	28				
29	63	05.0	+9.2*	84.3	63	09.9	+11.5	86.3	63	12.8	+13.8	88.2	63	13.6	+16.0	90.2	63	12.3	+18.3	92.2	63	09.0	+20.5	94.2	63	03.6	+22.7	96.1	62	56.2	+24.8	98.1	29
30	63	14.2	-3.2*	82.1	63	21.4	+9.5	84.1	63	26.6	+11.8*	86.1	63	29.6	+14.1	88.1	63	30.6	+16.4	90.1	63	29.5	+18.6	92.1	63	26.3	+20.8	94.1	63	21.0	+23.0	96.1	30
31	63	21.4	+5.2*	79.9	63	30.9	+7.5*	81.9	63	38.4	+9.7*	83.9	63	43.7	+12.1*	85.9	63	47.0	+14.4*	87.9	63	48.1	+16.7	89.9	63	47.1	+19.0	92.0	63	44.0	+21.2	94.0	31
32	63	26.6	+3.0*	77.7	63	38.4	+5.3*	79.6	63	48.1	+7.7*	81.6	63	55.8	+10.0*	83.7	64	01.4	+12.3*	85.7	64	04.8	+14.7*	87.8	64	06.1	+17.0*	89.8	64	05.2	+19.3	91.9	32
33	63	29.6	+1.0*	75.4	63	43.7</																											

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 31° , 329°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z	H	c	d	Z									
0	47	55.8	-45.0	129.8	47	17.1	-45.8	130.6	46	37.7	-46.5	131.4	45	57.7	-47.2	132.2	45	17.1	-47.8	132.9	44	36.0	-48.5	133.7	43	54.3	-49.1	134.4	43	12.1	-49.7	135.0	0
1	47	10.8	-45.5	130.7	46	31.3	-46.2	131.5	45	51.2	-46.9	132.3	45	10.5	-47.6	133.1	44	29.3	-48.3	133.8	43	47.5	-48.9	134.5	43	0.52	-49.5	135.2	1				
2	46	25.3	-46.0	131.7	45	45.1	-46.7	132.5	45	04.3	-47.4	133.2	44	22.9	-48.0	133.9	43	41.0	-48.6	134.6	42	58.6	-49.2	135.3	42	15.7	-49.7	135.9	2				
3	45	39.3	-46.4	132.6	44	58.4	-47.1	133.4	44	16.9	-47.7	134.1	43	34.9	-48.3	134.8	42	52.4	-48.9	135.4	42	09.4	-49.4	136.1	41	26.0	-50.0	136.7	3				
4	44	52.9	-46.8	133.5	44	11.3	-47.5	134.2	43	29.2	-48.1	134.9	42	46.6	-48.7	135.6	42	03.5	-49.2	136.2	41	20.0	-49.8	136.8	40	36.0	-50.3	137.4	4				
5	44	46.1	-47.3	134.4	43	23.8	-47.8	135.1	42	41.1	-48.4	135.7	41	57.9	-49.0	136.4	41	14.3	-49.6	137.0	40	30.2	-50.1	137.6	39	45.7	-50.5	138.1	5				
6	43	18.8	-47.5	135.3	42	36.0	-48.2	135.9	41	52.7	-48.8	136.5	41	08.9	-49.3	137.1	40	24.7	-49.8	137.7	39	40.1	-50.3	138.3	38	55.2	-50.8	138.8	6				
7	42	31.3	-48.0	136.1	41	47.8	-48.5	136.7	41	03.9	-49.0	137.3	40	19.6	-49.6	137.9	39	34.9	-50.1	138.4	38	49.8	-50.5	139.0	37	18.6	-51.5	140.0	7				
8	41	43.3	-48.2	136.9	40	59.3	-48.8	137.5	40	14.9	-49.4	138.1	39	30.0	-49.8	138.6	38	44.8	-50.3	139.2	37	59.3	-50.8	139.7	36	27.1	-51.7	140.6	8				
9	40	55.1	-48.4	137.7	40	10.5	-49.1	138.3	39	25.5	-49.6	138.8	38	40.2	-50.1	139.3	37	54.5	-50.6	139.9	36	22.1	-51.4	140.8	35	35.4	-51.8	141.3	9				
10	40	06.5	-48.9	138.5	39	21.4	-49.4	139.0	38	35.9	-49.9	139.5	37	50.1	-50.4	140.0	37	03.9	-50.8	140.5	36	17.4	-51.2	141.0	35	30.7	-51.7	141.5	10				
11	39	17.6	-49.2	139.2	38	32.0	-49.7	139.7	37	46.0	-50.1	140.2	36	59.7	-50.6	140.7	36	13.1	-51.0	141.2	35	26.2	-51.4	141.6	34	39.0	-51.8	142.1	11				
12	38	28.4	-49.4	139.9	37	42.3	-49.9	140.4	36	55.9	-50.4	140.9	36	09.1	-50.8	141.4	35	22.1	-51.2	141.8	34	34.8	-51.6	142.3	33	47.2	-52.0	142.7	32				
13	37	39.0	-49.7	140.7	36	52.4	-50.2	141.1	36	05.5	-50.6	141.6	35	18.3	-51.0	142.1	34	30.9	-51.4	142.5	33	43.2	-51.8	142.9	32	07.0	-52.5	143.7	13				
14	36	49.3	-50.0	141.4	36	02.2	-50.3	141.8	35	14.9	-50.8	142.3	34	27.3	-51.2	142.7	33	39.5	-51.6	143.1	32	51.4	-52.0	143.5	32	03.0	-52.3	143.9	14				
15	35	59.3	-50.2	142.1	35	11.9	-50.6	142.5	34	24.1	-51.0	142.9	33	36.1	-51.4	143.3	32	47.9	-51.8	143.7	31	59.4	-52.1	144.1	31	10.7	-52.5	144.4	15				
16	35	09.1	-50.3	142.7	34	21.3	-50.8	143.2	33	33.1	-51.2	143.6	32	44.7	-51.5	143.9	31	56.1	-51.9	144.3	31	07.3	-52.3	144.7	30	18.2	-52.6	145.0	16				
17	34	18.8	-50.7	143.4	33	30.5	-51.0	143.8	32	41.9	-51.3	144.2	31	53.2	-51.8	144.5	31	04.2	-52.1	144.9	30	15.0	-52.4	145.2	29	25.6	-52.8	145.6	17				
18	33	28.1	-50.8	144.0	32	39.5	-51.2	144.4	31	50.6	-51.6	144.8	31	01.4	-51.9	145.1	30	12.1	-52.2	145.5	29	22.6	-52.6	145.8	28	32.8	-52.8	146.1	18				
19	32	37.3	-50.8	144.7	31	48.3	-51.4	145.0	30	59.0	-51.7	145.4	30	09.5	-52.0	145.7	29	19.9	-52.4	146.0	28	30.0	-52.7	146.3	27	40.0	-53.0	146.6	26				
20	31	46.4	-51.2	145.3	30	56.9	-51.5	145.6	30	07.3	-51.9	146.0	29	17.5	-52.2	146.3	28	27.5	-52.5	146.6	27	37.3	-52.8	146.9	26	47.0	-53.2	147.2	25				
21	30	55.2	-51.5	145.9	30	05.4	-51.7	146.2	29	15.4	-52.0	146.6	28	25.3	-52.4	146.9	27	35.0	-52.7	147.1	26	44.5	-53.0	147.4	25	03.1	-53.5	147.9	21				
22	30	03.9	-51.5	146.5	29	13.7	-51.8	146.8	28	23.4	-52.1	147.1	27	32.9	-52.4	147.4	26	42.3	-52.7	147.7	25	51.5	-53.0	147.9	24	06.0	-53.3	148.2	22				
23	29	12.4	-51.7	147.1	28	21.9	-52.0	147.4	27	31.3	-52.3	147.7	26	40.5	-52.6	148.0	25	49.6	-52.9	148.2	24	58.5	-53.2	148.5	24	07.3	-53.5	148.7	23				
24	28	20.7	-51.8	147.7	27	29.9	-52.1	148.0	26	39.0	-52.4	148.2	25	47.9	-52.7	148.5	24	56.7	-53.0	148.7	23	13.8	-53.5	149.2	22	22.3	-53.8	149.4	24				
25	27	28.9	-51.9	148.3	26	37.8	-52.2	148.5	25	46.6	-52.5	148.8	24	55.2	-52.8	149.0	23	03.7	-53.1	149.3	22	20.3	-53.6	149.7	21	28.5	-53.9	149.9	25				
26	26	37.0	-52.1	148.8	25	45.6	-52.4	149.1	24	54.1	-52.7	149.3	23	04.2	-52.9	149.5	22	10.6	-53.2	149.8	21	26.7	-53.7	150.0	20	34.6	-53.9	150.4	26				
27	25	44.9	-52.2	149.4	24	53.2	-52.4	149.6	23	01.4	-52.7	149.8	22	17.4	-53.2	150.3	21	25.3	-53.6	150.5	20	33.0	-53.7	150.7	19	40.7	-54.0	150.8	27				
28	24	52.7	-52.3	149.9	24	00.8	-52.6	150.1	23	08.7	-52.9	150.4	22	16.5	-53.1	150.6	21	24.2	-53.4	150.8	20	31.7	-53.6	150.9	19	39.3	-53.9	151.1	28				
29	24	00.4	-52.4	150.5	23	08.2	-52.7	150.7	22	15.8	-52.9	150.9	21	23.4	-53.2	151.1	20	30.8	-53.4	151.3	19	38.1	-53.6	151.4	18	45.4	-53.9	151.6	29				
30	23	08.0	-52.5	151.0	22	15.5	-52.8	151.2	21	22.9	-53.1	151.4	20	30.2	-53.3	151.6	19	37.4	-53.6	151.7	18	44.5	-53.8	151.9	17	51.5	-54.0	152.1	30				
31	22	15.5	-52.6	151.5	21	22.7	-52.9	151.7	20	29.8	-53.1	151.9	19	36.9	-53.4	152.1	18	43.8	-53.6	152.2	17	50.7	-53.8	152.4	16	47.5	-54.0	152.5	31				
32	21	22.9	-52.7	152.0	20	29.8	-52.9	152.2	19	36.7	-53.2	152.4	18	43.5	-53.4	152.5	17	50.2	-53.6	152.7	16	45.9	-53.9	152.8	15	30.6	-54.3	153.1	32				
33	20	30.2	-52.8	152.5	19	36.9	-53.1	152.7	18	43.5	-53.3	152.9	17	50.1	-53.5	153.0	16	56.6	-53.7	153.2	15	03.0	-53.9	153.3	15	09.4	-54.2	153.4	33				
34	19	37.4	-52.9	153.0	18	43.8	-53.2	153.2	17	50.2	-53.6	153.5	16	56.6	-53.6	153.5	15	02.9	-53.8	153.6	14	15.2	-54.0	153.7	14	21.4	-54.4	154.0	34				
35	18	44.5	-53.0	153.5	17	50.7	-53.2	153.7	16	56.9	-53.4	153.8	15	03.0	-53.6	154.0	14	09.1	-53.9	154.1	14	15.1	-54.1	154.2	13	21.0	-54.0	154.6	35				
36	17	51.5	-53.0	154.0	16	57.5	-53.2	154.2	15	03.5	-53.5	154.3	14	09.4	-53.7	154.4	13	21.4	-54.0	155.0	12	27.0	-54.2	155.1	11	32.5	-54.5	155.2	36				
37	16	58.5	-53.2	154.5	16	04.3	-53.4	154.7	15	10.0	-53.5	154.8	14	15.7	-53.7	154.9	13	21.4	-54.0	155.0	12	30.0	-54.5	155.3	37								
38	16	05.3	-53.1	155.0	15	10.9	-53.5	155.1	14	16.5	-53.6	155.2	13	22.0	-53.8	155.3	12	27.4	-54.0	155.4	10	38.2	-54.5	155.6	9								
39	15	12.2	-53.3	155.5	14	17.6	-53.5	155.6	13	22.9	-53.6	155.7	12	28.2	-53.9	155.8	11	33.4	-54.0	155.9	10	38.7	-54.3	156.0	9								
40	14	18.9	-53.5	156.0	13	24.1	-53.5	156.1	12	29.3	-53.7	156.2	11	34.3	-53.8	156.3	10	39.4	-54.0	156.3	9	44.4	-54.2	156.4	8								
41	13	25.6	-53.6	156.4	12	30.6	-53.5	156.5	11	35.6	-53.8	156.6	10	40.5	-53.9	156.7	9	45.4	-54.1	156.8	8	50.2	-54.3	156.8	7								
42	12	32.3	-53.4	156.9	11	37.1	-53.6	157.0	10	41.8	-53.7	157.1	9	46.6	-54.0	157.1	8	51.3	-54.2	157.2	7	0.6	-54.5	157.3	6								
43	11	38.9	-53.4	157.4	10	43.5</																											

S. Lat. { L.H.A. greater than 180° Zn= $180^{\circ}-Z$
 { L.H.A. less than 180°Zn= $180^{\circ}+Z$

LATITUDE SAME NAME AS DECLINATION

L.H.A. 149° , 211°

32°, 328° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.
0	47 15.6 +43.9	128.7		46 37.7 +44.8	129.5		45 59.2 +45.6	130.3		45 20.1 +46.3	131.1		44 40.4 +47.0	131.8		44 00.1 +47.7	132.5		43 19.3 +48.3	133.2		42 37.9 +48.9	133.9		0
1	47 59.5 +43.4	127.7		47 22.5 +44.2	128.5		46 44.8 +45.0	129.4		46 06.4 +45.8	130.2		45 27.4 +46.5	130.9		44 47.8 +47.2	131.7		44 07.6 +47.9	132.4		43 26.8 +48.6	133.1		1
2	48 42.9 +42.8	126.6		48 06.7 +43.7	127.5		47 29.8 +44.6	128.4		46 52.2 +45.4	129.2		46 13.9 +46.2	130.0		45 35.0 +46.9	130.8		44 55.5 +47.6	131.6		44 15.4 +48.2	132.3		2
3	49 25.7 +42.2	125.5		48 50.4 +43.1	126.5		48 14.4 +44.0	127.4		47 37.6 +44.8	128.3		47 00.1 +45.6	129.1		46 21.9 +46.4	129.9		45 43.1 +47.1	130.7		45 03.6 +47.9	131.5		3
4	50 07.9 +41.6	124.4		49 33.5 +42.6	125.4		48 58.4 +43.4	126.4		48 22.4 +44.3	127.3		47 45.7 +45.2	128.1		47 08.3 +46.0	129.0		46 30.2 +46.7	129.8		45 51.5 +47.4	130.6		4
5	50 49.5 +40.8	123.3		50 16.1 +41.9	124.3		49 41.8 +42.9	125.3		49 06.7 +43.8	126.2		48 30.9 +44.6	127.2		47 54.3 +45.4	128.0		47 16.9 +46.3	128.9		46 38.9 +47.0	129.7		5
6	51 30.4 +40.1	122.1		50 58.0 +41.2	123.2		50 24.7 +42.2	124.2		49 50.5 +43.2	125.2		49 15.5 +44.1	126.1		48 39.7 +45.0	127.1		48 03.2 +45.8	128.0		47 25.9 +46.6	128.8		6
7	52 10.5 +39.4	120.9		51 39.2 +40.5	122.0		51 06.9 +41.5	123.1		50 33.7 +42.5	124.1		49 59.6 +43.5	125.1		49 24.7 +44.4	126.1		48 49.0 +45.3	127.0		48 12.5 +46.1	127.9		7
8	52 49.9 +38.7	119.7		52 19.7 +39.8	120.8		51 48.4 +40.9	121.9		51 16.2 +41.9	123.0		50 43.1 +42.9	124.0		50 09.1 +43.9	125.0		49 34.3 +44.7	126.0		48 58.6 +45.6	126.9		8
9	53 28.6 +37.7	118.4		52 59.5 +38.9	119.6		52 29.3 +40.1	120.7		51 58.1 +41.2	121.8		50 26.0 +42.2	122.9		50 53.0 +43.2	123.9		50 19.0 +44.2	124.9		49 44.2 +45.1	125.9		9
10	54 06.3 +36.9	117.1		53 38.4 +38.2	118.3		53 09.4 +39.3	119.5		52 39.3 +40.5	120.6		52 08.2 +41.6	121.8		51 36.2 +42.6	122.8		51 03.2 +43.6	123.9		50 29.3 +44.5	124.9		10
11	54 43.2 +36.1	115.8		54 16.6 +37.2	117.0		53 48.7 +38.5	118.2		53 19.8 +39.7	119.4		52 49.8 +40.8	120.6		52 18.8 +41.9	121.7		51 46.8 +42.9	122.8		51 13.8 +43.9	123.8		11
12	55 19.2 +34.9	114.4		54 53.8 +36.3	115.7		54 27.2 +37.6	116.9		53 59.5 +38.8	118.2		53 30.6 +40.1	119.4		53 00.7 +41.1	120.5		52 29.7 +42.3	121.6		51 57.7 +43.3	122.7		12
13	55 54.1 +34.0	112.9		55 30.1 +35.4	114.3		55 04.8 +36.7	115.6		54 38.3 +38.0	116.8		54 10.7 +39.2	118.1		53 41.8 +40.5	119.3		53 12.0 +41.5	120.5		52 41.0 +42.6	121.6		13
14	56 28.1 +32.8	111.4		56 05.5 +34.3	112.8		55 41.5 +35.8	114.2		55 16.3 +37.1	115.5		54 49.9 +38.3	116.8		54 22.3 +39.6	118.0		53 53.5 +40.8	119.2		53 23.6 +41.9	120.4		14
15	57 00.9 +31.7	109.9		56 39.8 +33.2	111.3		56 17.3 +34.6	112.7		55 53.4 +36.1	114.1		55 28.2 +37.5	115.4		55 01.9 +38.7	116.7		54 34.3 +40.0	118.0		54 05.5 +41.2	119.2		15
16	57 32.6 +30.5	108.3		57 13.0 +32.1	109.8		56 51.9 +33.6	111.3		56 29.5 +35.1	112.7		56 05.7 +36.5	114.1		56 40.6 +37.5	115.4		55 14.3 +39.1	116.7		54 46.7 +40.4	118.0		16
17	58 03.1 +29.2	106.7		57 45.1 +30.8	108.2		57 25.5 +32.5	109.7		57 04.6 +34.0	111.2		56 42.2 +35.4	112.6		56 18.4 +36.9	114.0		55 53.4 +38.2	115.4		55 27.1 +39.5	116.7		17
18	58 32.3 +27.9	105.1		58 15.9 +29.7	106.6		57 58.0 +31.3	108.2		57 38.6 +32.8	109.7		57 17.6 +34.4	111.1		56 55.3 +35.9	112.6		56 31.6 +37.3	114.0		56 06.6 +38.6	115.3		18
19	59 00.2 +26.6	103.4		58 45.6 +28.2	105.0		58 29.3 +30.0	106.5		58 11.4 +31.7	108.1		57 52.0 +33.3	109.6		57 31.4 +34.7	111.1		57 08.9 +36.2	112.5		56 45.2 +37.6	113.9		19
20	59 26.8 +25.0	101.6		59 13.8 +26.9	103.3		58 59.3 +28.6	104.9		58 43.1 +30.3	106.5		58 25.3 +32.0	108.0		58 05.9 +33.7	109.6		57 45.1 +35.2	111.1		57 22.8 +36.7	112.5		20
21	59 51.8 +23.6	99.8		59 40.7 +25.5	101.5		59 27.9 +27.3	102.4		59 13.4 +29.1	104.8		58 57.3 +30.8	106.4		58 39.6 +32.4	108.0		58 20.3 +34.0	109.5		57 59.5 +35.6	111.0		21
22	60 15.4 +22.0	98.0		60 06.2 +23.9	99.7		59 55.2 +25.8	101.4		59 42.5 +27.7	103.1		59 28.1 +29.4	104.7		59 12.0 +31.2	106.4		58 54.3 +32.9	107.9		58 35.1 +34.4	109.5		22
23	60 37.4 +20.4	96.1		60 30.1 +22.4	97.8		60 21.0 +24.4	99.6		60 10.2 +26.2	101.3		59 57.5 +28.1	103.0		59 43.2 +29.8	104.7		59 27.2 +31.6	106.3		59 09.5 +33.3	107.9		23
24	60 57.8 +18.7	94.1		60 52.5 +20.7	95.9		60 45.4 +22.7	97.7		60 36.4 +24.7	99.5		60 25.6 +26.6	101.2		60 13.0 +28.5	102.9		59 58.8 +30.2	104.6		59 42.8 +32.0	106.3		24
25	61 16.5 +16.9	92.2		61 13.2 +19.0	94.0		61 08.1 +21.1	95.8		61 01.1 +23.1	97.6		60 52.2 +25.1	99.4		60 41.5 +27.0	101.1		60 29.0 +28.9	102.9		60 14.8 +30.6	104.6		25
26	61 33.4 +15.1	90.2		61 32.2 +17.3	92.0		61 29.2 +19.3	93.9		61 24.2 +21.4	95.7		61 17.3 +23.4	97.5		61 08.5 +25.4	99.3		60 57.9 +27.3	101.1		60 45.4 +29.3	102.8		26
27	61 48.5 +13.3	88.1		61 49.5 +15.5	90.0		61 48.5 +17.6	91.9		61 45.6 +19.7	93.7		61 40.7 +21.8	95.6		61 33.9 +23.9	97.4		61 25.2 +25.9	99.2		61 14.7 +27.7	101.0		27
28	62 0.8 +11.5	86.1		62 05.0 +13.6	87.9		62 06.1 +15.8	89.8		62 05.3 +18.0	91.7		62 02.5 +20.1	93.6		61 57.8 +22.1	95.5		61 51.1 +24.2	97.3		61 42.4 +26.3	99.2		28
29	62 13.3 +9.5*	84.0		62 18.6 +11.7	85.9		62 21.9 +13.9	87.8		62 23.3 +16.1	89.7		62 22.6 +18.3	91.6		62 19.9 +20.5	93.5		62 15.3 +22.5	95.4		62 08.7 +24.6	97.3		29
30	62 22.8 +7.5*	81.8		62 30.3 +9.7	83.7		62 35.8 +12.0	85.7		62 39.4 +14.2	87.6		62 40.9 +16.4	89.5		62 40.4 +18.6	91.5		62 37.8 +20.8	93.4		62 33.3 +22.9	95.3		30
31	62 30.3 +5.5	79.7		62 40.0 +7.8	81.6		62 47.8 +10.0	83.5		62 53.6 +12.3	85.5		62 57.3 +14.5	87.4		62 59.0 +16.7	89.4		62 58.6 +18.9	91.3		62 56.2 +21.1	93.3		31
32	62 35.8 +3.6*	77.5		62 47.8 +5.8*	79.4		62 57.8 +8.0*	81.4		63 05.8 +10.3*	83.3		63 11.8 +12.5*	85.3		63 15.7 +12.8*	87.3		63 17.5 +17.1	89.2		63 17.3 +19.3	91.2		32
33	62 39.4 +1.5*	75.4		62 53.6 +3.7*	77.3		63 05.8 +6.0*	79.2		63 16.1 +8.2*	81.1		63 24.3 +10.5*	83.1		63 30.5 +12.8*	85.1		63 34.6 +15.1*	87.1		63 36.6 +17.4	89.1		33
34	62 40.9 -0.5*	73.2		62 57.3 +1.7*	75.1		63 11.8 +3.9	77.0		63 24.3 +6.2*	78.9		63 34.8 +8.5*	80.9		63 43.3 +10.8*	82.9		63 49.7 +13.1*	84.9		63 54.0 +15.4*	86.9		34
35	60 47.7 -2.6*	71.0		61 25.5 -19.6	51.6		63 23.5 -8.5*	61.5		63 23.5 -6.5*	63.2		63 49.7 -6.4*	65.1		64 14.1 -4.3*	66.9		64 36.7 -21.1	68.9		64 57.3 +0.3*	70.9		35
36	61 55.4 -14.3	58.2		62 26.3 -12.4	59.8		62 55.7 -10.5	61.5		63 23.5 -8.5*	63.2		63 49.7 -6.4*	65.1		64 14.1 -4.3*	66.9		64 36.7 -21.1	68.9		64 57.3 +0.3*	70.9		36
37	61 41.1 -16.1																								

LATITUDE CONTRARY NAME TO DECLINATION **L.H.A. 32°, 328°**

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.		
	Hc	d	Z	Hc	d	Z																					
0	47 15.6 -44.5 128.7	46 37.7 -45.2 129.5		45 59.2 -45.9 130.3	45 20.1 -46.7 131.1		44 40.4 -47.4 131.8	44 00.1 -48.0 132.5		43 19.3 -48.7 133.2	42 37.9 -49.2 133.9		42 30.6 -49.0 134.0	41 48.7 -49.6 134.7		41 41.6 -49.2 134.8	40 59.1 -49.8 135.4		40 52.4 -49.6 135.6	40 09.3 -50.1 136.2		39 19.2 -50.4 136.9	39 22.0 -50.5 137.6		38 28.8 -50.5 137.6	38 08.9 -51.5 141.1	0
1	46 31.1 -45.0 129.6	45 52.5 -45.7 130.4		45 13.3 -46.5 131.2	44 33.4 -47.1 132.0		43 53.0 -47.7 132.7	43 12.1 -48.4 133.4		42 30.6 -49.0 134.0	41 48.7 -49.6 134.7		41 41.6 -49.2 134.8	40 59.1 -49.8 135.4		40 52.4 -49.6 135.6	40 09.3 -50.1 136.2		39 19.2 -50.4 136.9	39 22.0 -50.5 137.6		38 28.8 -50.5 137.6	38 08.9 -51.5 141.1	1			
2	45 46.1 -45.4 130.6	45 06.8 -46.1 131.4		44 26.8 -46.8 132.1	43 46.3 -47.4 132.8		43 05.3 -48.1 133.5	42 23.7 -48.7 134.2		41 41.6 -49.2 134.8	40 59.1 -49.8 135.4		40 52.4 -49.6 135.6	40 09.3 -50.1 136.2		39 19.2 -50.4 136.9	39 22.0 -50.5 137.6		38 28.8 -50.5 137.6	38 08.9 -51.5 141.1	2						
3	45 00.7 -45.8 131.5	44 20.7 -46.6 132.3		43 40.0 -47.2 133.0	42 58.9 -47.9 133.7		42 17.2 -48.5 134.3	41 35.0 -49.0 135.0		40 52.4 -49.6 135.6	40 09.3 -50.1 136.2		39 19.2 -50.4 136.9	39 22.0 -50.5 137.6		38 28.8 -50.5 137.6	38 08.9 -51.5 141.1	3									
4	44 14.9 -46.3 132.4	43 34.1 -46.9 133.1		42 52.8 -47.6 133.8	42 11.0 -48.2 134.5		41 28.7 -48.7 135.1	40 46.0 -49.3 135.7		40 02.8 -49.8 136.3	39 19.2 -50.4 136.9		38 28.8 -50.5 137.6	38 08.9 -51.5 141.1		37 28.8 -50.5 137.6	37 08.9 -51.5 141.1	4									
5	43 28.6 -46.7 133.3	42 47.2 -47.3 134.0		42 05.2 -47.9 134.7	41 22.8 -48.5 135.3		40 40.0 -49.1 135.9	39 56.7 -49.6 136.5		39 13.0 -50.1 137.0	38 22.0 -50.5 137.6		37 38.3 -50.9 138.3	37 02.9 -51.0 138.7		36 47.4 -51.0 138.9	36 41.9 -51.3 139.1		35 56.4 -51.3 139.6	35 05.1 -51.4 140.2							
6	42 41.9 -47.0 134.2	41 59.9 -47.7 134.8		41 17.3 -48.2 135.5	40 34.3 -48.8 136.1		39 50.9 -49.3 136.7	39 07.1 -49.9 137.2		38 22.9 -50.4 137.8	37 32.5 -50.6 138.4		36 47.4 -51.0 138.9	36 41.9 -51.3 139.1		35 56.4 -51.3 139.6	35 05.1 -51.4 140.2		34 28.8 -50.5 137.6	34 08.9 -51.5 141.1	6						
7	41 54.9 -47.4 135.0	41 12.2 -48.0 135.6		40 29.1 -48.6 136.2	39 45.5 -49.1 136.8		39 01.6 -49.6 137.4	38 17.2 -50.1 137.9		37 21.7 -50.3 138.6	36 41.9 -50.8 139.1		35 56.4 -51.3 139.6	35 05.1 -51.4 140.2		34 28.8 -50.5 137.6	34 08.9 -51.5 141.1		33 22.0 -51.8 141.5	33 20.2 -51.9 142.1	7						
8	41 07.5 -47.8 135.8	40 24.2 -48.3 136.4		39 40.5 -48.8 137.0	38 56.4 -49.4 137.6		38 12.0 -49.9 138.1	37 21.7 -50.3 138.6		36 41.9 -50.8 139.1	35 56.4 -51.3 139.6		34 28.8 -50.5 137.6	34 08.9 -51.5 140.2		33 22.0 -51.8 141.5	33 20.2 -51.9 142.1		32 25.8 -51.7 142.3	32 17.7 -51.8 142.7	8						
9	40 19.7 -48.0 136.6	39 35.9 -48.6 137.2		38 51.7 -49.2 137.8	38 07.0 -49.6 138.3		37 22.1 -50.1 138.8	36 36.8 -50.6 139.3		35 51.1 -51.0 139.8	35 05.1 -51.4 140.2		34 28.8 -50.5 137.6	34 08.9 -51.5 140.2		33 22.0 -51.8 141.5	33 20.2 -51.9 142.1		32 23.8 -51.7 142.3	32 17.7 -51.8 142.7							
10	39 31.7 -48.4 137.4	38 47.3 -48.8 138.0		38 02.5 -49.4 138.5	37 17.4 -49.9 139.0		36 32.0 -50.4 139.5	35 46.2 -50.8 140.0		35 00.1 -51.2 140.4	34 13.7 -51.7 140.9		33 22.0 -51.8 141.5	33 20.2 -51.9 142.1		32 25.8 -51.7 142.3	32 17.7 -51.8 142.7		31 23.8 -51.7 142.3	31 17.7 -51.8 142.7	10						
11	38 43.3 -48.7 138.2	37 58.4 -49.2 138.7		37 13.1 -49.6 139.2	36 27.5 -50.1 139.7		35 41.6 -50.6 140.2	34 55.4 -51.0 140.6		33 22.0 -51.8 141.5	33 20.2 -51.9 142.1		32 25.8 -51.7 142.3	32 17.7 -51.8 142.7		31 23.8 -51.7 142.3	31 17.7 -51.8 142.7		30 23.8 -51.7 142.3	30 17.7 -51.8 142.7							
12	37 54.6 -48.9 138.9	37 09.2 -49.4 139.4		36 23.5 -49.9 139.9	35 37.4 -50.3 140.4		34 51.0 -50.7 140.8	33 44.4 -51.2 141.3		33 17.4 -51.6 141.7	32 30.2 -51.9 142.1		31 25.8 -51.7 142.3	31 18.3 -51.8 142.7		30 23.8 -51.7 142.3	30 17.7 -51.8 142.7		29 23.8 -51.7 142.3	29 17.7 -51.8 142.7							
13	37 05.7 -49.2 139.7	36 19.8 -49.7 140.1		35 33.6 -50.2 140.6	34 47.1 -50.6 141.0		33 00.3 -51.0 141.5	32 13.2 -51.4 141.9		31 21.8 -51.6 142.5	30 46.1 -52.0 143.2		29 48.7 -52.4 143.8	29 04.1 -52.8 145.5		28 45.4 -52.2 145.2	28 16.1 -52.8 145.5		27 41.9 -52.2 145.2	27 16.1 -52.8 145.5							
14	36 16.5 -49.5 140.4	35 30.1 -49.9 140.8		34 43.4 -50.3 141.3	33 56.5 -50.8 141.7		33 09.3 -51.2 142.1	32 21.8 -51.6 142.5		31 34.1 -52.0 143.2	30 46.1 -52.4 143.8		29 51.1 -52.6 145.7	29 23.3 -52.9 146.0		28 48.7 -52.2 145.7	28 04.8 -52.7 144.9		27 44.2 -52.2 145.7	27 16.1 -52.8 145.5							
15	35 27.0 -49.7 141.1	34 40.2 -50.1 141.5		33 53.1 -50.6 141.9	32 05.7 -50.9 142.3		32 18.1 -51.3 142.7	31 30.2 -51.7 143.1		30 42.1 -52.0 143.5	29 53.8 -52.4 143.8		28 48.7 -52.2 145.7	28 04.8 -52.7 144.9		27 44.2 -52.2 145.7	27 16.1 -52.8 145.5		26 30.3 -52.7 146.2	26 10.4 -52.6 146.4							
16	34 37.3 -49.9 141.8	33 50.1 -50.4 142.2		33 02.5 -50.7 142.6	32 14.8 -51.2 143.0		31 26.8 -51.6 143.3	30 38.5 -51.9 143.7		29 50.1 -52.3 144.0	29 01.4 -52.6 144.4		28 48.7 -52.2 145.7	28 04.8 -52.7 144.9		27 44.2 -52.2 145.7	27 16.1 -52.8 145.5		26 30.3 -52.7 146.2	26 10.4 -52.6 146.4							
17	33 47.4 -50.1 142.4	32 59.7 -50.5 142.8		32 11.8 -50.9 143.2	31 23.6 -51.3 143.6		30 35.2 -51.6 143.9	29 46.6 -52.0 144.3		28 57.8 -52.4 144.6	28 08.8 -52.7 144.9		27 44.2 -52.2 145.7	27 16.1 -52.8 145.5		26 30.3 -52.7 146.2	26 10.4 -52.6 146.4		25 23.8 -52.6 146.2	25 10.4 -52.6 146.4							
18	32 57.3 -50.3 143.1	32 09.2 -50.7 143.5		31 20.9 -51.1 143.8	30 32.3 -51.5 144.2		29 43.6 -51.9 144.5	28 54.6 -52.2 144.8		27 44.2 -52.4 145.7	27 12.9 -52.6 145.7		26 30.3 -52.7 146.2	26 10.4 -52.6 146.4		25 23.8 -52.6 146.2	25 10.4 -52.6 146.4		24 23.8 -52.6 146.2	24 10.4 -52.6 146.4							
19	32 07.0 -50.6 143.7	31 18.5 -50.8 144.1		30 29.8 -51.3 144.4	29 40.8 -51.6 144.8		28 51.7 -51.9 145.1	28 04.2 -52.4 145.4		27 44.2 -52.4 145.7	27 12.9 -52.6 145.7		26 30.3 -52.7 146.2	26 10.4 -52.6 146.4		25 23.8 -52.6 146.2	25 10.4 -52.6 146.4		24 23.8 -52.6 146.2	24 10.4 -52.6 146.4							
20	31 16.4 -50.7 144.4	30 27.6 -51.1 144.7		29 38.5 -51.5 145.0	28 49.2 -51.8 145.4		27 59.8 -52.2 145.7	27 10.1 -52.4 146.0		26 20.3 -52.7 146.2	25 30.4 -53.1 146.5		24 23.8 -52.6 146.2	24 10.4 -52.6 146.4		23 23.8 -52.6 146.2	23 10.4 -52.6 146.4		22 23.8 -52.6 146.2	22 10.4 -52.6 146.4							
21	30 25.7 -50.9 145.0	29 36.5 -51.3 145.3		28 47.0 -51.5 145.6	27 57.4 -51.9 145.9		27 07.6 -52.2 146.2	26 17.7 -52.6 146.5		25 27.6 -52.4 146.8	24 37.3 -53.1 147.0		23 23.8 -52.6 147.0	23 10.4 -52.6 147.4		22 23.8 -52.6 147.0	22 10.4 -52.6 147.4		21 23.8 -52.6 147.0	21 10.4 -52.6 147.4							
22	29 34.8 -51.0 145.6	28 45.2 -51.4 145.9		27 55.5 -51.8 146.2	27 05.5 -52.0 146.5		26 15.4 -52.4 146.8	25 25.1 -52.6 147.0		24 34.7 -53.0 147.3	23 44.2 -53.3 147.5		22 23.8 -52.6 147.0	22 10.4 -52.6 147.4		21 23.8 -52.6 147.0	21 10.4 -52.6 147.4		20 23.8 -52.6 147.0	20 10.4 -52.6 147.4							
23	28 43.8 -51.2 146.2	27 53.8 -51.5 146.5		27 03.7 -51.8 146.8	26 13.5 -52.2 147.1		25 23.0 -52.5 147.3	24 32.5 -52.8 147.6		23 21.7 -53.0 147.9	22 30.9 -53.3 148.2		21 20.3 -53.4 148.5	20 48.7 -53.7 148.8		20 23.8 -53.4 148.5	20 10.4 -53.4 148.8		19 23.8 -53.4 148.5	19 10.4 -53.4 148.8							
24	27 52.6 -51.4 146.8	27 02.3 -51.7 152.4		26 43.2 -52.5 147.2	25 11.2 -52.9 152.6		24 40.5 -53.5 152.9	23 17.1 -53.7 153.0		22 24.8 -53.9 153.7	21 30.9 -54.3 154.0		21 20.3 -54.1 154.3	20 48.7 -54.4 154.6		20 23.8 -54.1 154.3	20 10.4 -54.1 154.6		19 23.8 -54.1 154.3	19 10.4 -54.1 154.6							
25	27 01.2 -51.5 147.4	26 10.6 -51.8 147.6		25 19.9 -52.1 147.9	24 29.0 -52.4 148.1		23 37.9 -52.7 148.4	22 46.8 -53.0 148.6		21 20.4 -53.7 153.4	20 55.5 -54.1 153.7		20 08.9 -53.4 149.8	19 41.1 -53.7 150.0		18 23.8 -53.7 150.0	18 10.4 -53.7 150.3		17 23.8 -53.7 150.0	17 10.4 -53.7 150.3							
26	26 09.7 -51.6 148.0	25 18.8 -51.9 148.2		24 27.8 -52.3 148.4	23 36.6 -52.6 148.7		22 45.2 -52.8 148.9	21 53.8 -53.1 149.1		20 12.3 -53.4 150.3	19 20.3 -54.1 150.7		18 09.8 -53.4 150.9	17 10.4 -53.7 151.1		17 23.8 -53.7 150.9	17 10.4 -53.7 151.1		16 34.8 -5								

33°, 327° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.									
0	46 34.7 +43.4	127.6		45 57.7 +44.2	128.4		45 20.1 +45.0	129.2		44 41.9 +45.7	130.0		44 03.0 +46.5	130.7		43 23.6 +47.1	131.5		42 43.6 +47.8	132.1		42 03.1 +48.4	132.8		0
1	47 18.1 +42.8	126.6		46 41.9 +43.7	127.4		46 05.1 +44.5	128.3		45 27.6 +45.3	129.1		44 49.5 +46.1	129.8		44 10.7 +46.8	130.6		43 31.4 +47.5	131.3		42 51.5 +48.1	132.0		1
2	48 00.9 +42.2	125.5		47 25.6 +43.2	126.4		46 49.6 +44.0	127.3		46 12.9 +44.9	128.1		45 35.6 +45.6	128.9		44 57.5 +46.4	129.7		44 18.9 +47.1	130.5		43 39.6 +47.8	131.2		2
3	48 43.1 +41.7	124.5		48 08.8 +42.6	125.4		47 33.6 +43.5	126.3		46 57.8 +44.3	127.2		46 21.2 +45.1	128.0		45 43.9 +45.9	128.8		45 06.0 +46.6	129.6		44 27.4 +47.4	130.4		3
4	49 24.8 +41.0	123.4		48 51.4 +41.9	124.3		48 17.1 +42.9	125.3		47 42.1 +43.8	126.2		47 06.3 +44.6	127.0		46 29.8 +45.5	127.9		45 52.6 +46.3	128.7		45 14.8 +47.0	129.5		4
5	50 05.8 +40.3	122.2		49 33.3 +41.4	123.2		49 00.0 +42.3	124.2		48 25.9 +43.2	125.1		47 50.9 +44.2	126.1		47 15.3 +44.9	126.9		46 38.9 +45.7	127.8		46 01.8 +46.5	128.6		5
6	50 46.1 +39.6	121.1		50 14.7 +40.6	122.1		49 42.3 +41.7	123.1		49 09.1 +42.7	124.1		48 35.1 +43.5	125.0		48 00.2 +44.5	125.9		47 24.6 +45.3	126.8		46 48.3 +46.1	127.7		6
7	51 25.7 +38.9	119.9		50 55.3 +40.0	121.0		50 24.0 +41.0	122.0		49 51.8 +42.0	123.0		49 18.6 +43.0	124.0		48 44.7 +43.9	124.9		48 09.9 +44.8	125.9		47 34.4 +45.6	126.7		7
8	52 04.6 +38.4	118.7		51 35.3 +39.2	119.8		51 05.0 +40.3	120.8		50 33.8 +41.3	121.9		50 01.6 +42.4	122.9		49 28.6 +43.3	123.9		48 54.7 +44.3	124.9		48 20.0 +45.1	125.8		8
9	52 42.6 +37.3	117.4		52 14.5 +38.4	118.5		51 45.3 +39.6	119.7		51 15.1 +40.7	120.7		50 44.0 +41.7	121.8		50 11.9 +42.7	122.8		49 39.0 +43.6	123.8		49 05.1 +44.6	124.8		9
10	53 19.9 +36.3	116.1		52 52.9 +37.6	117.3		52 24.9 +38.8	118.4		51 55.8 +39.9	119.6		51 25.7 +41.0	120.7		50 54.6 +42.1	121.7		50 22.6 +43.1	122.7		49 49.7 +44.0	123.7		10
11	53 56.2 +35.5	114.7		53 30.5 +36.7	116.0		53 03.7 +37.9	117.2		52 35.7 +39.2	118.3		52 06.7 +40.3	119.5		51 36.7 +41.4	120.6		51 05.7 +42.4	121.6		50 33.7 +43.5	122.7		11
12	54 31.7 +34.4	113.4		54 07.2 +35.9	114.6		53 41.6 +37.1	115.9		53 14.9 +38.3	117.1		52 47.0 +40.7	118.3		52 18.1 +40.7	119.4		51 48.1 +41.8	120.5		51 17.2 +42.8	121.6		12
13	55 06.1 +33.4	111.9		54 43.1 +34.8	113.3		54 18.7 +36.2	114.5		53 53.2 +37.5	115.8		53 26.6 +38.7	117.0		52 58.8 +39.9	118.2		52 29.9 +41.0	119.3		52 00.0 +42.1	120.5		13
14	55 39.5 +32.4	110.5		55 17.9 +33.8	111.8		54 54.9 +35.3	113.2		54 30.7 +36.6	114.5		54 05.3 +37.8	115.7		53 38.7 +39.1	116.9		53 10.9 +40.3	118.1		52 42.1 +41.4	119.3		14
15	56 11.9 +31.3	109.0		55 51.7 +32.8	110.4		55 30.2 +34.2	111.7		55 07.3 +35.6	113.1		54 43.1 +37.0	114.4		54 17.8 +38.2	115.7		53 51.2 +39.5	116.9		53 23.5 +40.7	118.1		15
16	56 43.2 +30.4	107.4		56 24.5 +31.6	108.9		56 04.4 +33.1	110.3		55 42.9 +34.6	111.7		55 20.1 +36.0	113.0		54 56.0 +37.3	114.3		54 30.7 +38.6	115.6		54 04.2 +39.8	116.9		16
17	57 13.2 +28.9	105.8		56 56.1 +30.5	107.3		56 37.5 +32.0	108.8		56 17.5 +33.5	110.2		55 56.1 +35.0	111.6		55 33.3 +36.4	112.9		55 09.3 +37.8	114.3		54 44.0 +39.1	115.6		17
18	57 42.1 +27.5	104.2		57 26.6 +29.2	105.7		57 09.5 +30.9	107.2		56 51.0 +32.4	108.7		56 31.1 +33.9	110.1		56 09.7 +35.4	111.5		55 47.1 +36.8	112.9		55 23.1 +38.1	114.2		18
19	58 09.6 +26.2	102.5		57 55.8 +27.9	104.1		57 40.4 +29.6	105.6		57 23.4 +31.3	107.1		57 05.0 +32.8	108.6		56 45.1 +34.4	110.1		56 23.9 +35.7	111.5		56 01.2 +37.2	112.9		19
20	58 35.8 +24.8	100.8		58 23.7 +26.6	102.4		58 10.0 +28.3	104.0		57 54.7 +30.0	105.5		57 37.8 +31.7	107.1		57 19.5 +33.2	108.6		56 59.6 +34.8	110.0		56 38.4 +36.2	111.5		20
21	59 00.6 +23.3	99.1		58 50.3 +25.1	100.7		58 38.3 +27.0	102.3		58 24.7 +28.7	103.9		58 09.5 +30.4	105.5		57 52.7 +32.0	107.0		57 34.4 +33.6	108.5		57 14.6 +35.1	110.0		21
22	59 23.9 +21.8	97.3		59 15.4 +23.7	98.9		59 05.3 +25.5	100.6		58 53.4 +27.4	102.2		58 39.9 +29.1	103.8		58 24.7 +30.8	105.4		58 08.0 +32.5	107.0		57 49.7 +34.1	108.5		22
23	59 45.7 +20.2	95.4		59 39.1 +22.2	97.1		59 30.8 +24.1	98.8		59 20.8 +25.9	100.5		59 09.0 +27.7	102.1		58 55.5 +29.6	103.8		58 40.5 +31.2	105.4		58 23.8 +32.9	106.9		23
24	60 05.9 +18.6	93.5		60 01.3 +20.6	95.3		59 54.9 +22.5	97.0		59 46.7 +24.5	98.7		59 36.7 +26.4	100.4		59 25.1 +28.1	102.1		59 11.7 +29.9	103.7		58 56.7 +31.6	105.3		24
25	60 24.5 +16.9	91.6		60 21.9 +18.9	93.4		60 17.4 +21.0	95.1		60 11.2 +22.9	96.9		60 03.1 +24.8	98.6		59 53.2 +26.7	100.3		59 41.6 +28.6	102.0		59 28.3 +30.3	103.7		25
26	60 41.4 +15.2	89.7		60 40.8 +17.3	91.5		60 38.4 +19.3	93.2		60 34.1 +21.3	95.0		60 27.9 +23.3	96.8		60 19.9 +25.3	98.5		60 10.2 +27.1	100.2		59 58.6 +29.0	101.9		26
27	60 56.6 +13.4	87.7		60 58.1 +15.5	89.5		60 57.7 +17.6	91.3		60 55.4 +19.6	93.1		60 51.2 +21.7	94.9		60 45.2 +23.6	96.7		60 37.3 +25.6	98.4		60 27.6 +27.5	100.2		27
28	61 10.0 +11.6	85.7		61 13.6 +13.7	87.5		61 15.3 +15.8	89.3		61 15.0 +17.9	91.1		61 12.9 +20.0	93.0		61 08.8 +22.1	94.8		61 02.9 +24.0	96.6		60 55.1 +26.0	98.4		28
29	61 21.6 +9.7	83.6		61 27.3 +11.9	85.5		61 31.1 +14.0	87.3		61 32.9 +16.2	89.1		61 32.9 +18.2	91.0		61 30.9 +20.3	92.8		61 26.9 +22.5	94.7		61 21.1 +24.4	96.5		29
30	61 31.3 +7.9	81.6		61 39.2 +10.0	83.4		61 45.1 +12.2	85.3		61 49.1 +14.3	87.1		61 51.1 +16.5	89.0		61 51.2 +18.6	90.9		61 49.4 +20.7	92.7		61 45.5 +22.8	94.6		30
31	61 39.2 +5.8	79.5		61 49.2 +8.1	81.3		61 57.3 +10.2	83.2		62 03.4 +12.5	85.1		62 07.6 +14.6	86.9		62 09.8 +16.8	88.8		62 10.1 +18.9	90.7		62 08.3 +21.1	92.6		31
32	61 45.1 +4.0	77.4		61 57.3 +6.1	79.2		62 07.5 +8.4	81.1		62 15.9 +10.5	83.0		62 22.2 +12.2	84.9		62 26.6 +15.0	86.8		62 29.0 +17.1	88.7		62 29.4 +19.3	90.6		32
33	61 49.1 +2.0	75.3		62 03.4 +4.2	77.1		62 15.9 +6.3	79.0		62 26.4 +8.6	80.8		62 35.0 +10.8*	82.7		62 41.6 +13.0	84.7		62 46.1 +15.3	86.6		62 48.7 +17.4	88.5		33
34	61 51.1 +0.1	73.2		62 07.6 +2.2	75.0		62 22.2 +4.4	76.8		62 35.0 +6.8*	78.7		62 45.8 +13.4	80.6		62 54.6 +11.0	82.5		63 01.4 +13.3*	84.5		63 06.1 +15.6	86.4		34
35	61 51.2 -1.8*	71.0		62 09.8 +0.3*	72.8		62 26.6 +2.4	74.7		62 41.6 +4.5*	76.5		62 54.6 +6.8*	78.4		63 05.6 +9.1*	80.4		63 14.7 +11.3*	82.3		63 21.7 +13.5*	84.3		35
36	61 49.4 -3.9	68.9		62 10.1 -1.8*	70.7		62 29.0 +0.4*	72.5		62 46.1 +2.6*	74.4		63 01.4 +4.7*	76.2		63 14.7 +7.0*	78.2		63 26.0 +9.2*	80.1		63 35.2 +11.6*	82.1		36
37	61 45.5 -5.																								

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 33°, 327°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	46 34.7 -43.9	127.6	45 57.7 -44.7	128.4	45 20.1 -45.4	129.2	44 41.9 -46.2	130.0	44 03.0 -46.9	130.7	43 23.6 -47.6	131.5	42 43.6 -48.2	132.1	42 03.1 -48.8	132.8	42 56.2 -50.2	136.5	37 56.2 -49.7	136.0	37 56.2 -50.2	136.5	5		
1	45 50.8 -44.4	128.6	45 13.0 -45.1	129.4	44 34.7 -45.9	130.1	43 55.7 -46.6	130.9	43 16.1 -47.2	131.6	42 36.0 -47.9	132.3	41 55.4 -48.5	133.0	41 14.3 -49.1	133.6	41 56.2 -50.4	137.2	37 06.0 -49.9	137.6	37 06.0 -50.4	137.2	6		
2	45 06.4 -44.9	129.5	44 27.9 -45.6	130.3	43 48.8 -46.3	131.0	43 09.1 -47.0	131.7	42 28.9 -47.6	132.4	41 48.1 -48.2	133.1	41 06.9 -48.8	133.7	40 25.2 -49.4	134.4	2								
3	44 21.5 -45.3	130.5	43 42.3 -46.0	131.2	43 02.5 -46.7	131.9	42 22.1 -47.3	132.6	41 41.3 -48.0	133.3	40 59.9 -48.5	133.9	40 18.1 -49.1	134.5	39 35.8 -49.7	135.1	3								
4	43 36.2 -45.7	131.4	42 56.3 -46.5	132.1	42 15.8 -47.1	132.8	41 34.8 -47.7	133.4	40 53.3 -48.3	134.1	40 11.4 -48.9	134.7	39 29.0 -49.4	135.3	38 46.1 -49.9	135.8	4								
5	42 50.5 -46.2	132.3	42 09.8 -46.7	132.9	41 28.7 -47.4	133.6	40 47.1 -48.0	134.2	40 05.0 -48.6	134.8	39 22.5 -49.1	135.4	38 39.6 -49.7	136.0	37 56.2 -50.2	136.5	5								
6	42 04.3 -46.5	133.1	41 23.1 -47.2	133.8	40 41.3 -47.7	134.4	39 59.1 -48.3	135.0	39 16.4 -48.8	135.6	38 33.4 -49.4	136.2	37 49.9 -49.9	136.7	37 06.0 -50.4	137.2	6								
7	41 17.8 -46.9	134.0	40 35.9 -47.5	134.6	39 53.6 -48.1	135.2	39 10.8 -48.7	135.8	38 27.6 -49.2	136.3	37 44.0 -49.7	136.9	37 00.0 -50.2	137.4	36 15.6 -50.6	137.9	7								
8	40 30.9 -47.2	134.8	39 48.4 -47.8	135.4	39 05.5 -48.4	136.0	38 22.1 -48.9	136.5	37 38.4 -49.4	137.1	36 54.3 -49.9	137.6	36 09.8 -50.4	138.1	35 25.0 -50.8	138.6	8								
9	39 43.7 -47.5	135.6	39 00.6 -48.1	136.2	38 17.1 -48.6	136.7	37 33.2 -49.1	137.3	36 49.0 -49.7	137.8	36 04.4 -50.2	138.3	35 19.4 -50.6	138.8	34 34.2 -51.1	139.2	9								
10	38 56.2 -47.9	136.4	38 12.5 -48.4	137.0	37 28.5 -49.0	137.5	36 44.1 -49.5	138.0	35 59.3 -49.9	138.5	35 14.2 -50.3	139.0	34 28.8 -50.8	139.4	33 43.1 -51.2	139.8	10								
11	38 08.3 -48.2	137.2	37 24.1 -48.7	137.7	36 39.5 -49.1	138.2	35 54.6 -49.6	138.7	35 09.4 -50.1	139.2	34 23.9 -50.6	139.6	33 38.0 -51.0	140.0	32 51.9 -51.4	140.5	11								
12	37 20.1 -48.4	137.9	36 35.4 -48.9	138.4	35 50.4 -49.5	138.9	35 05.0 -49.9	139.4	34 19.3 -50.4	139.8	33 33.3 -50.8	140.3	32 47.0 -51.2	140.7	32 00.5 -51.6	141.1	12								
13	36 31.7 -48.7	138.7	35 46.5 -49.2	139.1	35 00.9 -49.6	139.6	34 15.1 -50.1	140.1	33 28.9 -50.5	140.5	32 42.5 -51.0	140.9	31 55.8 -51.4	141.3	31 08.9 -51.8	141.7	13								
14	35 43.0 -49.0	139.4	34 57.3 -49.5	139.9	34 11.3 -49.9	140.3	33 25.0 -50.4	140.7	32 38.4 -50.8	141.1	31 51.5 -51.1	141.5	31 04.4 -51.5	141.9	30 17.1 -51.9	142.3	14								
15	34 54.0 -49.2	140.1	34 07.8 -49.6	140.5	33 21.4 -50.1	141.0	32 34.6 -50.5	141.4	31 47.6 -50.9	141.8	30 00.4 -51.3	142.1	30 12.9 -51.7	142.5	29 25.2 -52.1	142.8	15								
16	34 04.8 -49.4	140.8	33 18.2 -49.9	141.2	32 31.3 -50.3	141.6	31 44.1 -50.7	142.0	30 56.7 -51.1	142.4	30 09.1 -51.5	142.7	29 21.2 -51.8	143.1	28 33.1 -52.1	143.4	16								
17	33 15.4 -49.7	141.5	32 28.3 -50.1	141.9	31 41.0 -50.5	142.3	30 53.4 -50.9	142.6	30 05.6 -51.2	143.0	29 17.6 -51.6	143.3	28 29.4 -52.0	143.7	27 41.0 -52.4	144.0	17								
18	32 25.7 -49.8	142.1	31 38.2 -50.2	142.5	30 50.5 -50.7	142.9	30 02.5 -51.0	143.2	29 14.4 -51.5	143.6	28 26.0 -51.8	143.9	27 37.4 -52.1	144.2	26 48.6 -52.4	144.5	18								
19	31 35.9 -50.1	142.8	30 48.0 -50.5	143.2	29 59.8 -50.8	143.5	29 11.5 -51.2	143.9	28 22.9 -51.5	144.2	27 34.2 -51.9	144.5	26 45.3 -52.3	144.8	25 56.2 -52.6	145.1	19								
20	30 45.8 -50.2	143.4	29 57.5 -50.6	143.8	29 09.0 -51.0	144.1	28 20.3 -51.4	144.4	27 31.4 -51.7	144.8	26 42.3 -52.1	145.0	25 53.0 -52.3	145.3	25 03.6 -52.7	145.6	20								
21	29 55.6 -50.4	144.1	29 06.9 -50.8	144.4	28 18.0 -51.2	144.7	27 28.9 -51.5	145.0	26 39.7 -51.9	145.3	25 50.2 -52.1	145.6	25 00.7 -52.5	145.9	24 10.9 -52.8	146.1	21								
22	29 05.2 -50.6	144.7	28 16.1 -51.0	145.0	27 26.8 -51.3	145.3	26 37.4 -51.6	145.6	25 47.8 -52.0	145.9	24 58.1 -52.3	146.1	24 08.2 -52.6	146.4	23 18.1 -52.9	146.6	22								
23	28 14.6 -50.8	145.3	27 25.1 -51.1	145.6	26 35.5 -51.4	145.9	25 45.8 -51.8	146.2	24 55.8 -52.0	146.4	24 05.8 -52.4	146.7	23 15.6 -52.7	146.9	22 25.2 -53.0	147.2	23								
24	27 23.8 -50.9	145.9	26 34.0 -51.2	146.2	25 44.1 -51.6	146.5	24 54.0 -51.9	146.7	24 03.8 -52.3	147.0	23 13.4 -52.5	147.2	22 22.9 -52.8	147.4	21 32.2 -53.0	147.7	24								
25	26 32.9 -51.1	146.5	25 42.8 -51.4	146.8	24 52.5 -51.7	147.0	24 02.1 -52.0	147.3	23 11.5 -52.3	147.5	22 20.9 -52.6	147.7	21 30.1 -52.9	148.0	20 39.2 -53.2	148.2	25								
26	25 41.8 -51.2	147.1	24 51.4 -51.5	147.4	24 00.8 -51.8	147.6	23 10.1 -52.1	147.8	22 19.2 -52.4	148.1	21 28.3 -52.7	148.3	20 37.2 -53.0	148.5	19 46.0 -53.3	148.7	26								
27	24 50.6 -51.3	147.7	23 59.9 -51.7	147.9	23 09.0 -52.0	148.1	22 18.0 -52.3	148.4	21 26.8 -52.5	148.6	20 35.6 -52.8	148.8	19 44.2 -53.1	149.0	18 52.7 -53.3	149.1	27								
28	23 59.3 -51.4	148.2	23 08.2 -51.7	148.5	22 17.0 -52.0	148.7	21 25.7 -52.3	148.9	20 34.3 -52.6	149.1	19 42.8 -52.9	149.3	18 51.1 -53.1	149.5	17 59.4 -53.4	149.6	28								
29	23 07.9 -51.6	148.8	22 16.5 -51.9	149.0	21 25.0 -52.1	149.2	20 33.4 -52.4	149.4	19 41.7 -52.7	149.6	18 49.9 -53.0	149.8	17 58.0 -53.2	149.9	17 06.0 -53.4	150.1	29								
30	22 16.3 -51.7	149.4	21 24.6 -51.9	149.6	20 32.9 -52.3	149.8	19 41.0 -52.5	149.9	18 49.0 -52.8	150.1	17 56.9 -53.0	150.3	17 04.8 -53.3	150.4	16 12.6 -53.6	150.6	30								
31	21 24.6 -51.7	149.9	20 32.7 -52.1	150.1	19 40.6 -52.3	150.3	18 48.5 -52.6	150.5	17 56.2 -52.8	150.6	17 03.9 -53.1	150.8	16 11.5 -53.3	151.0	15 19.0 -53.5	151.1	31								
32	20 32.9 -51.9	150.4	19 40.6 -52.1	150.6	18 48.3 -52.4	150.8	17 55.9 -52.7	151.0	16 03.4 -52.9	151.1	15 10.8 -53.2	151.3	15 18.2 -53.4	151.4	14 25.5 -53.7	151.5	32								
33	19 41.0 -52.0	151.0	18 48.5 -52.3	151.1	17 55.9 -52.5	151.3	16 03.2 -52.7	151.5	15 10.5 -53.0	151.6	15 17.6 -53.2	151.7	14 24.8 -53.5	151.9	13 31.8 -53.7	152.0	33								
34	18 49.0 -52.1	151.5	17 56.2 -52.3	151.7	17 03.4 -52.6	151.8	16 10.5 -52.9	152.0	15 17.5 -53.1	152.1	14 24.4 -53.3	152.3	13 31.3 -53.5	152.5	12 38.1 -53.7	152.4	34								
35	17 56.9 -52.1	152.0	17 03.9 -52.4	152.2	16 10.8 -52.6	152.3	15 17.6 -52.8	152.4	14 24.4 -53.1	152.6	13 31.1 -53.3	152.7	12 37.8 -53.6	152.8	11 44.4 -53.8	152.9	35								
36	17 04.8 -52.2	152.6	16 11.5 -52.5	152.7	15 18.2 -52.7	152.8	14 24.8 -53.0	152.9	13 31.3 -53.2	153.1	12 37.8 -53.4	153.2	11 44.2 -53.6	153.3	10 50.6 -53.8	153.3	36								
37	16 12.6 -52.3	153.1	15 19.0 -52.5	153.2	14 25.5 -52.8	153.3	13 31.8 -53.0	153.4	12 38.1 -53.2	153.5	11 44.4 -53.4	153.6	10 50.6 -53.6	153.7	9 56.8 -53.8	153.8	37								
38	15 20.3 -52.4	153.6	14 26.5 -52.6	153.7	13 32.7 -52.8	153.8	12 38.8 -53.0	153.9	11 44.9 -53.2	154.0	10 51.0 -53.5	154.1	9 57.0 -53.7	154.2	9 03.0 -53.9	154.2	38								
39	14 27.9 -52.4	154.1	13 33.9 -52.6	154.2	12 39.9 -52.9	154.3	11 45.8 -53.1	154.4	10 51.7 -53.3	154.5	9 57.5 -53.5	154.5	9 03.3 -53.7	154.6	8 09.1 -53.9	154.7	39								
40	13 35.5 -52.5	154.6	12 41.3 -52.8	154.7	11 47.0 -52.9	154.8	10 52.7 -53.1	154.9	9 58.4 -53.4	154.9	8 04.0 -53.5	155.0	8 09.6 -53.7	155.1	7 15.2 -54.0	155.1	40								
4																									

34°, 326° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z																						
0	45 53.2 +42.8	126.5		45 17.1 +43.7	127.4		44 40.4 +44.5	128.2		44 03.0 +45.3	128.9		43 25.0 +46.0	129.7		42 46.4 +46.7	130.4		42 07.3 +47.4	131.1		41 27.6 +48.0	131.7		0
1	46 36.0 +42.3	125.5		46 00.8 +43.2	126.4		45 24.9 +44.0	127.2		44 48.3 +44.8	128.0		44 11.0 +45.6	128.8		43 33.1 +46.3	129.5		42 54.7 +47.0	130.2		42 15.6 +47.7	130.9		1
2	47 18.3 +41.7	124.5		46 44.0 +42.6	125.4		46 08.9 +43.4	126.2		45 33.1 +44.3	127.1		44 56.6 +45.1	127.9		44 19.4 +45.9	128.6		43 41.7 +46.6	129.4		43 03.3 +47.3	130.1		2
3	48 00.0 +41.1	123.4		47 26.6 +42.0	124.3		46 52.3 +43.0	125.2		46 17.4 +43.8	126.1		45 41.7 +44.6	126.9		45 05.3 +45.4	127.7		44 28.3 +46.2	128.5		43 50.6 +46.9	129.3		3
4	48 41.1 +40.5	122.3		48 08.6 +41.5	123.3		47 35.3 +42.4	124.2		47 01.2 +43.3	125.1		46 26.3 +44.2	126.0		45 50.7 +45.0	126.8		45 14.5 +45.7	127.6		44 37.5 +46.5	128.4		4
5	49 21.6 +39.2	121.2		48 50.1 +40.8	122.2		48 17.7 +41.7	123.1		47 44.5 +42.7	124.1		47 10.5 +43.6	125.0		46 35.7 +44.5	125.8		46 00.2 +45.3	126.7		45 24.0 +46.1	127.5		5
6	50 01.4 +39.0	120.0		49 30.9 +40.1	121.1		48 59.4 +41.2	122.1		48 27.2 +42.1	123.0		47 54.1 +43.0	123.9		47 20.2 +43.9	124.9		46 45.5 +44.8	125.7		46 10.1 +45.6	126.6		6
7	50 40.4 +38.4	118.9		50 11.0 +39.4	119.9		49 40.6 +40.5	120.9		49 09.3 +41.5	121.9		48 37.1 +42.5	122.9		48 04.1 +43.4	123.8		47 30.3 +44.3	124.8		46 55.7 +45.2	125.6		7
8	51 18.8 +37.5	117.6		50 50.4 +38.7	118.7		50 21.1 +39.8	119.8		49 50.8 +40.8	120.8		49 19.6 +41.9	121.8		48 47.5 +42.9	122.8		48 14.6 +43.8	123.7		47 40.9 +44.6	124.7		8
9	51 56.3 +36.7	116.4		51 29.1 +37.9	117.5		51 00.9 +39.0	118.6		50 31.6 +40.2	119.7		50 01.5 +41.2	120.7		49 30.4 +42.2	121.7		48 58.4 +43.2	122.7		48 25.5 +44.1	123.7		9
10	52 33.0 +35.8	115.1		52 07.0 +37.1	116.3		51 39.9 +38.3	117.4		51 11.8 +39.4	118.5		50 42.7 +40.5	119.6		50 12.6 +41.6	120.6		49 41.6 +42.5	121.6		49 09.6 +43.6	122.6		10
11	53 08.8 +35.0	113.8		52 44.1 +36.2	115.0		52 18.2 +37.5	116.1		51 51.2 +38.7	117.3		51 23.2 +39.8	118.4		50 54.2 +40.8	119.5		50 24.1 +42.0	120.5		49 53.2 +42.9	121.6		11
12	53 43.8 +34.0	112.4		53 20.3 +35.3	113.6		52 55.7 +36.6	114.9		52 29.9 +37.8	116.0		52 03.0 +39.0	117.2		51 35.0 +40.2	118.3		51 06.1 +41.2	119.4		50 36.1 +42.3	120.5		12
13	54 17.8 +32.9	111.0		53 55.6 +34.4	112.3		53 32.3 +35.7	113.5		53 07.7 +37.0	114.8		52 42.0 +38.3	116.0		52 15.2 +39.4	117.1		51 47.3 +40.6	118.3		51 18.4 +41.7	119.4		13
14	54 50.7 +31.9	109.6		54 30.0 +33.4	110.9		54 08.0 +34.7	112.2		53 44.7 +36.1	113.4		53 20.3 +37.3	114.7		52 54.6 +38.7	115.9		52 27.9 +39.8	117.1		52 00.1 +40.9	118.2		14
15	55 22.6 +30.9	108.1		55 03.4 +32.3	109.4		54 42.7 +33.8	110.8		54 20.8 +35.2	112.1		53 57.6 +36.5	113.4		53 33.3 +37.7	114.6		53 07.7 +39.0	115.8		52 41.0 +40.2	117.0		15
16	55 53.5 +29.6	106.6		55 35.7 +31.2	108.0		55 16.5 +32.7	109.3		54 56.0 +34.1	110.7		54 34.1 +35.6	112.0		54 11.0 +36.0	113.3		53 46.7 +38.2	114.5		53 21.2 +39.4	115.8		16
17	56 23.1 +28.5	105.0		56 06.9 +30.0	106.4		55 49.2 +31.6	107.8		55 30.1 +33.1	109.2		55 09.7 +34.5	110.6		54 47.9 +36.0	111.9		54 24.9 +37.3	113.2		54 00.6 +38.6	114.5		17
18	56 51.6 +27.2	103.4		56 36.9 +28.9	104.9		56 20.8 +30.5	106.3		56 03.2 +32.0	107.8		55 44.2 +33.5	109.2		55 23.9 +34.9	110.5		55 02.2 +36.3	111.9		54 39.2 +37.7	113.2		18
19	57 18.8 +25.8	101.8		57 05.8 +27.6	103.3		56 51.3 +29.2	104.8		56 35.2 +30.9	106.2		56 17.7 +32.5	107.7		55 58.4 +34.0	109.1		55 38.5 +35.4	110.5		55 16.9 +36.7	111.8		19
20	57 44.7 +24.5	100.1		57 33.4 +26.3	101.6		57 20.5 +28.0	103.2		57 06.1 +29.7	104.7		56 50.2 +31.2	106.1		56 32.8 +32.8	107.6		56 13.9 +34.3	109.0		55 53.6 +35.8	110.4		20
21	58 09.2 +23.1	98.4		57 59.7 +24.9	99.9		57 48.5 +26.7	101.5		57 35.8 +28.3	103.0		57 21.4 +30.1	104.6		57 05.6 +31.7	106.1		56 48.2 +33.3	107.5		56 29.4 +34.8	109.0		21
22	58 32.3 +21.6	96.6		58 24.6 +23.5	98.2		58 15.2 +25.3	99.8		58 04.1 +27.1	101.4		57 51.5 +28.8	103.0		57 37.3 +30.4	104.5		57 21.5 +32.1	106.0		57 04.2 +33.6	107.5		22
23	58 53.9 +20.1	94.8		58 48.1 +22.0	96.4		58 40.5 +23.8	98.1		58 31.2 +25.7	99.7		58 20.3 +27.5	101.3		58 07.7 +29.2	102.9		57 53.6 +30.8	104.4		57 37.8 +32.5	106.0		23
24	59 14.0 +18.6	93.0		59 10.1 +20.4	94.6		59 04.3 +22.4	96.3		58 56.9 +24.3	98.0		58 47.8 +26.0	99.6		58 36.9 +27.9	101.2		58 24.4 +29.6	102.8		58 10.3 +31.3	104.4		24
25	59 32.6 +16.9	91.1		59 30.5 +18.9	92.8		59 26.7 +20.9	94.5		59 21.2 +22.7	96.2		59 13.8 +24.7	97.8		59 04.8 +26.5	99.5		58 54.0 +28.3	101.1		58 41.6 +30.1	102.7		25
26	59 49.5 +15.2	89.2		59 49.4 +17.3	90.9		59 47.6 +19.2	92.6		59 43.9 +21.2	94.3		59 38.5 +23.1	96.0		59 31.3 +25.0	97.7		59 22.3 +26.9	99.4		59 11.7 +28.6	101.1		26
27	60 04.7 +13.5	87.3		60 06.7 +15.5	89.0		60 06.8 +17.6	90.7		60 05.1 +19.6	92.5		60 01.6 +21.6	94.2		59 56.3 +23.5	95.9		59 49.2 +25.4	97.6		59 40.3 +27.3	99.3		27
28	60 18.2 +11.8	85.3		60 22.2 +13.9	87.1		60 24.4 +15.9	88.8		60 24.7 +17.9	90.6		60 23.2 +19.9	92.3		60 19.8 +22.0	94.1		60 14.6 +23.9	95.8		60 07.6 +25.9	97.6		28
29	60 30.0 +10.0	83.3		60 36.1 +12.0	85.1		60 40.3 +14.1	86.9		60 42.6 +16.3	88.6		60 42.6 +16.3	88.6		60 41.8 +20.3	92.2		60 38.5 +22.4	94.0		60 33.5 +24.2	95.7		29
30	60 40.0 +8.1	81.3		60 48.1 +10.3	83.1		60 54.4 +12.4	84.9		60 58.9 +14.4	86.7		61 01.4 +16.6	88.5		61 02.1 +18.6	90.3		61 00.9 +20.6	92.1		60 57.7 +22.7	93.9		30
31	60 48.1 +6.3	79.3		60 58.4 +8.4	81.1		61 06.8 +10.5	82.8		61 13.3 +12.6	84.6		61 18.0 +14.7	86.5		61 20.7 +16.8	88.3		61 21.5 +19.0	90.1		61 20.4 +21.1	92.0		31
32	60 54.4 +4.5	77.2		61 06.8 +6.5	79.0		61 17.3 +8.6	80.8		61 25.9 +10.8	82.6		61 32.7 +12.9	84.4		61 37.6 +15.0	86.3		61 40.5 +17.2	88.1		61 41.5 +19.3	90.0		32
33	60 58.9 +2.5	75.2		61 13.3 +4.7	76.9		61 25.9 +6.8	78.7		61 36.7 +8.9	80.5		61 45.6 +11.1	82.4		61 52.6 +13.3	84.2		61 57.7 +15.4	86.1		62 00.8 +17.5	88.0		33
34	61 01.4 +0.7	73.1		61 18.0 +2.7	74.9		61 32.7 +4.9	76.7		61 45.6 +7.0	80.3		61 56.7 +9.2	82.2		62 13.1 +13.5	84.0		62 05.9 +11.3	85.9		62 18.3 +15.7	85.9		34
35	61 20.1 -1.2	71.1		61 20.7 +0.8	72.8		61 37.6 +2.9	74.6		61 52.6 +5.1	76.4		62 05.9 +7.2	78.2		62 17.2 +9.4	80.1		62 26.6 +11.6	81.9		62 34.0 +13.8	83.8		35
36	61 00.9 -3.2	69.0		61 21.5 -1.1	70.7		61 40.5 +1.0	72.5		61 57.7 +3.1	74.2		62 13.1 +5.2	76.1		62 26.6 +7.4	77.9		62 38.2 +9.6	79.8		62 47.8 +11.8	81.7		36
37																									

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 34° , 326°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	45 53.2 -43.3	126.5	45 17.1 -44.1	127.4	44 40.4 -44.9	128.2	44 03.0 -45.7	128.9	43 25.0 -46.4	129.7	42 46.4 -47.0	130.4	42 07.3 -47.7	131.1	41 27.6 -48.3	131.7	40 39.3 -48.7	132.5	39 50.6 -48.9	133.3	39 01.7 -49.3	134.0	38 12.4 -49.5	134.8	0
1	45 09.9 -43.9	127.5	44 33.0 -44.7	128.3	43 55.5 -45.4	129.1	43 17.3 -46.0	129.8	42 38.6 -46.7	130.5	41 59.4 -47.5	131.2	41 19.6 -48.1	131.9	40 31.5 -48.4	132.7	39 50.6 -48.9	133.3	39 01.7 -49.3	134.0	38 12.4 -49.5	134.8	1		
2	44 26.0 -44.3	128.5	43 48.3 -45.0	129.3	43 10.1 -45.8	130.0	42 31.3 -46.5	130.7	41 51.9 -47.2	131.4	41 11.9 -47.7	132.0	40 31.5 -48.4	132.7	39 50.6 -48.9	133.3	39 01.7 -49.3	134.0	38 12.4 -49.5	134.8	2				
3	43 41.7 -44.8	129.4	43 03.3 -45.5	130.2	42 24.3 -46.2	130.9	41 44.8 -46.9	131.5	41 04.7 -47.5	132.2	40 24.2 -48.1	132.8	39 43.1 -48.6	133.4	39 01.7 -49.3	134.0	38 54.5 -49.0	134.2	38 12.4 -49.5	134.8	3				
4	42 56.9 -45.2	130.4	42 17.8 -45.9	131.0	41 38.1 -46.5	131.7	40 57.9 -47.2	132.4	40 17.2 -47.8	133.0	39 36.1 -48.4	133.6	38 54.5 -49.0	134.2	38 12.4 -49.5	134.8	38 12.4 -49.5	134.8	38 12.4 -49.5	134.8	4				
5	42 11.7 -45.6	131.2	41 31.9 -46.3	131.9	40 51.6 -47.0	132.6	40 10.7 -47.5	133.2	39 29.4 -48.1	133.8	38 47.7 -48.7	134.4	38 05.5 -49.2	134.9	37 22.9 -49.7	135.5	37 22.9 -49.7	135.5	37 22.9 -49.7	135.5	5				
6	41 26.1 -46.0	132.1	40 45.6 -46.6	132.8	40 04.6 -47.2	133.4	39 23.2 -47.8	134.0	38 41.3 -48.4	134.6	37 59.0 -49.0	135.1	37 16.3 -49.5	135.7	36 33.2 -50.0	136.2	36 33.2 -50.0	136.2	36 33.2 -50.0	136.2	6				
7	40 40.1 -46.3	133.0	39 59.0 -47.0	133.6	39 17.4 -47.6	134.2	38 35.4 -48.2	134.8	37 52.9 -48.7	135.3	37 10.0 -49.2	135.9	36 26.8 -49.7	136.4	35 43.2 -50.2	136.9	35 43.2 -50.2	136.9	35 43.2 -50.2	136.9	7				
8	39 53.8 -46.8	133.8	39 12.0 -47.3	134.4	38 29.8 -47.9	135.0	37 47.2 -48.4	135.5	37 04.2 -49.0	136.1	36 20.8 -49.5	136.6	35 37.1 -50.0	137.1	34 53.0 -50.5	137.5	34 53.0 -50.5	137.5	34 53.0 -50.5	137.5	8				
9	39 07.0 -47.0	134.6	38 24.7 -47.6	135.2	37 41.9 -48.1	135.7	36 58.8 -48.7	136.3	36 15.2 -49.2	136.8	35 31.3 -49.7	137.3	34 47.1 -50.2	137.7	34 02.5 -50.6	138.2	34 02.5 -50.6	138.2	34 02.5 -50.6	138.2	9				
10	38 20.0 -47.4	135.4	37 37.1 -47.9	136.0	36 53.8 -48.5	136.5	36 10.1 -49.0	137.0	35 26.0 -49.4	137.5	34 41.6 -49.9	137.9	33 56.9 -50.4	138.4	33 11.9 -50.8	138.8	33 11.9 -50.8	138.8	33 11.9 -50.8	138.8	10				
11	37 32.6 -47.6	136.2	36 49.2 -48.2	136.7	36 05.3 -48.7	137.2	35 21.1 -49.2	137.7	34 36.6 -49.7	138.2	33 51.7 -50.2	138.6	33 06.5 -50.6	139.1	32 21.1 -51.1	139.5	32 21.1 -51.1	139.5	32 21.1 -51.1	139.5	11				
12	36 45.0 -48.0	136.9	36 01.0 -48.5	137.4	35 16.6 -49.0	137.9	34 31.9 -49.5	138.4	33 46.9 -49.9	138.8	33 01.5 -50.3	139.3	32 15.9 -50.8	139.7	31 30.0 -51.2	140.1	31 30.0 -51.2	140.1	31 30.0 -51.2	140.1	12				
13	35 57.0 -48.2	137.7	35 12.5 -48.7	138.2	34 27.6 -49.2	138.6	33 42.4 -49.6	139.1	32 57.0 -50.2	139.5	32 11.2 -50.6	139.9	31 25.1 -50.8	140.3	30 38.8 -51.3	140.7	30 38.8 -51.3	140.7	30 38.8 -51.3	140.7	13				
14	35 08.8 -48.4	138.4	34 23.8 -49.0	138.9	33 38.4 -49.4	139.3	32 52.8 -49.9	139.8	32 06.8 -50.3	140.2	31 20.6 -50.7	140.6	30 34.2 -51.2	140.9	29 47.5 -51.6	141.3	29 47.5 -51.6	141.3	29 47.5 -51.6	141.3	14				
15	34 20.4 -48.8	139.1	33 34.8 -49.2	139.6	32 49.0 -49.6	140.0	32 02.9 -50.1	140.4	31 16.5 -50.5	140.8	30 29.9 -50.9	141.2	29 43.0 -51.3	141.5	28 55.9 -51.6	141.9	28 55.9 -51.6	141.9	28 55.9 -51.6	141.9	15				
16	33 31.6 -48.9	139.8	32 45.6 -49.4	140.3	31 59.4 -49.9	140.7	31 12.8 -50.2	141.1	30 26.0 -50.6	141.4	29 39.0 -51.1	141.8	28 51.7 -51.4	142.1	28 04.3 -51.8	142.5	28 04.3 -51.8	142.5	28 04.3 -51.8	142.5	16				
17	32 42.7 -49.2	140.5	31 56.2 -49.6	140.9	31 09.5 -50.0	141.3	30 22.6 -50.5	141.7	29 35.4 -50.9	142.1	28 47.9 -51.2	142.4	28 00.3 -51.6	142.7	27 12.5 -52.0	143.0	27 12.5 -52.0	143.0	27 12.5 -52.0	143.0	17				
18	31 53.5 -49.4	141.2	31 06.6 -49.8	141.6	30 19.5 -50.2	142.0	29 32.1 -50.6	142.3	28 44.5 -51.0	142.7	27 56.7 -51.4	143.0	27 08.7 -51.7	143.3	26 20.5 -52.1	143.6	26 20.5 -52.1	143.6	26 20.5 -52.1	143.6	18				
19	31 04.1 -49.6	141.9	30 16.8 -50.0	142.2	29 29.3 -50.4	142.6	28 41.5 -50.8	142.9	27 53.5 -51.2	143.3	27 05.3 -51.5	143.6	26 17.0 -51.8	143.9	25 28.4 -52.2	144.2	25 28.4 -52.2	144.2	25 28.4 -52.2	144.2	19				
20	30 14.5 -49.7	142.5	29 26.8 -50.2	142.9	28 38.9 -50.6	143.2	27 50.7 -50.9	143.5	27 02.3 -51.3	143.8	26 13.8 -51.6	144.1	25 25.1 -52.0	144.4	24 36.2 -52.3	144.7	24 36.2 -52.3	144.7	24 36.2 -52.3	144.7	20				
21	29 24.8 -50.0	143.2	28 36.6 -50.3	143.5	27 48.3 -50.7	143.8	26 59.8 -51.1	144.1	26 11.0 -51.4	144.4	25 22.2 -51.8	144.7	24 33.1 -52.1	145.0	23 43.9 -52.4	145.2	23 43.9 -52.4	145.2	23 43.9 -52.4	145.2	21				
22	28 34.8 -50.1	143.8	27 46.3 -50.5	144.1	26 57.6 -50.9	144.4	26 08.7 -51.3	144.7	25 19.6 -51.6	145.0	24 30.4 -51.9	145.3	23 41.0 -52.2	145.5	22 51.5 -52.6	145.8	22 51.5 -52.6	145.8	22 51.5 -52.6	145.8	22				
23	27 44.7 -50.3	144.4	26 55.8 -50.7	144.7	26 06.7 -51.0	145.0	25 17.4 -51.3	145.3	24 28.0 -51.7	145.6	23 38.5 -52.0	145.8	22 48.8 -52.4	146.1	21 58.9 -52.6	146.3	21 58.9 -52.6	146.3	21 58.9 -52.6	146.3	23				
24	26 54.4 -50.5	145.1	26 05.1 -50.8	145.3	25 15.7 -51.2	145.6	24 26.1 -51.5	145.9	23 36.3 -51.8	146.1	22 46.5 -52.2	146.4	21 56.4 -52.4	146.6	20 63.0 -52.7	147.0	20 63.0 -52.7	147.0	20 63.0 -52.7	147.0	24				
25	26 03.9 -50.6	145.7	25 14.3 -51.0	145.9	24 24.5 -51.3	146.2	23 34.6 -51.6	146.4	22 44.5 -51.9	146.7	21 54.3 -52.2	146.9	20 04.0 -52.5	147.1	19 13.6 -52.8	147.3	19 13.6 -52.8	147.3	19 13.6 -52.8	147.3	25				
26	25 13.3 -50.8	146.3	24 23.3 -51.1	146.5	23 33.2 -51.4	146.8	22 43.0 -51.7	147.0	21 52.6 -52.0	147.2	20 01.2 -52.1	147.4	19 11.5 -52.6	147.6	19 20.8 -52.9	147.8	19 20.8 -52.9	147.8	19 20.8 -52.9	147.8	26				
27	24 22.5 -50.8	146.8	23 32.2 -51.2	147.1	22 41.8 -51.5	147.3	21 51.3 -51.9	147.5	20 06.6 -52.2	147.7	19 09.8 -52.4	147.9	18 09.8 -52.4	148.1	17 29.9 -53.0	148.3	17 29.9 -53.0	148.3	17 29.9 -53.0	148.3	27				
28	23 31.7 -51.0	147.4	22 41.0 -51.3	147.6	21 50.3 -51.6	147.9	20 59.4 -51.9	148.1	19 08.4 -52.2	148.3	18 17.4 -52.5	148.5	17 26.2 -52.8	148.6	17 34.9 -53.0	148.8	17 34.9 -53.0	148.8	17 34.9 -53.0	148.8	28				
29	22 40.7 -51.2	148.0	21 49.7 -51.4	148.2	20 58.7 -51.8	148.4	19 07.5 -52.0	148.6	18 23.9 -52.4	148.8	17 30.3 -52.7	149.0	16 08.3 -53.0	149.1	15 41.9 -53.2	149.3	15 41.9 -53.2	149.3	15 41.9 -53.2	149.3	29				
30	21 49.5 -51.2	148.6	20 48.7 -51.4	148.8	19 06.9 -52.0	149.0	19 15.5 -52.2	149.1	18 23.9 -52.4	149.3	17 31.5 -52.6	149.4	16 39.6 -53.0	150.1	15 47.6 -53.0	150.1	15 47.6 -53.0	150.1	15 47.6 -53.0	150.1	30				
31	20 58.3 -51.4	149.1	19 06.7 -51.6	149.3	19 15.1 -51.9	149.5	18 23.3 -52.2	149.7	17 31.5 -52.4	149.8	16 39.6 -53.0	150.1	15 47.6 -53.0	150.1	14 55.6 -53.3	150.3	14 55.6 -53.3	150.3	14 55.6 -53.3	150.3	31				
32	20 06.9 -51.4	149.7	19 15.1 -51.8	149.8	18 23.2 -52.1	150.0	17 31.1 -52.2	150.2	16 39.1 -52.6	150.3	15 46.9 -52.8	150.5	14 54.6 -53.0	150.6	14 02.3 -53.3	150.7	14 02.3 -53.3	150.7	14 02.3 -53.3	150.7	32				
33	19 15.5 -51.6	150.2	18 23.3 -52.3	150.4	17 31.1 -52.0	150.5	16 38.9 -52.4	150.7	15 46.5 -52.6	150.8	14 50.9 -52.9														

35°, 325° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Dec.																					
0	45 11.2 +42.3	125.5		44 36.0 +43.1	126.3		44 00.1 +44.0	127.1		43 23.6 +44.7	127.9		42 46.4 +45.5	128.6		42 08.7 +46.2	129.3		41 30.4 +46.9	130.0		40 51.6 +47.5	130.7		0
1	45 53.5 +41.7	124.5		45 19.1 +42.7	125.4		44 44.1 +43.5	126.2		44 08.3 +44.3	127.0		43 31.9 +45.1	127.7		42 54.9 +45.8	128.5		42 17.3 +46.6	129.2		41 39.1 +47.3	129.9		1
2	46 35.2 +41.2	123.5		46 01.8 +42.1	124.3		45 27.6 +42.9	125.2		44 52.6 +43.8	126.0		44 17.0 +44.6	126.8		43 40.7 +45.4	127.6		43 03.9 +46.1	128.3		42 26.4 +46.8	129.0		2
3	47 16.4 +40.6	122.4		46 43.9 +41.5	123.3		46 10.5 +42.4	124.2		45 36.4 +43.3	125.0		45 01.6 +44.2	125.9		44 26.1 +45.0	126.7		43 50.0 +45.7	127.4		43 13.2 +46.5	128.2		3
4	47 57.0 +39.9	121.3		47 25.4 +40.9	122.3		46 52.9 +41.9	123.2		46 19.7 +42.8	124.0		45 45.8 +43.6	124.9		45 11.1 +44.5	125.7		44 35.7 +45.3	126.5		43 59.7 +46.0	127.3		4
5	48 36.9 +39.3	120.2		48 06.3 +40.3	121.2		47 34.8 +41.3	122.1		47 02.5 +42.2	123.0		46 29.4 +43.2	123.9		45 55.6 +44.0	124.8		45 21.0 +44.8	125.6		44 45.7 +45.7	126.4		5
6	49 16.2 +38.5	119.0		48 46.6 +39.6	120.0		48 16.1 +40.6	121.0		47 44.7 +41.7	122.0		47 12.6 +42.5	122.9		46 39.6 +43.4	123.8		46 05.8 +44.4	124.7		45 31.4 +45.1	125.5		6
7	49 54.7 +37.8	117.9		49 26.2 +38.9	118.9		48 56.7 +40.0	119.9		48 26.4 +41.0	120.9		47 55.1 +42.0	121.8		47 23.0 +43.0	122.8		46 50.2 +43.8	123.7		46 16.5 +44.7	124.5		7
8	50 32.5 +37.0	116.7		50 05.1 +38.2	117.7		49 36.7 +39.3	118.8		49 07.4 +40.3	119.8		48 37.1 +41.4	120.8		48 06.0 +42.3	121.7		47 34.0 +43.3	122.7		47 01.2 +44.2	123.6		8
9	51 09.5 +36.3	115.4		50 43.3 +37.4	116.5		50 16.0 +38.5	117.6		49 47.7 +39.7	118.6		49 18.5 +40.7	119.7		48 48.3 +41.8	120.7		48 17.3 +42.7	121.6		47 45.4 +43.6	122.6		9
10	51 45.8 +35.3	114.1		51 20.7 +36.6	115.3		50 54.5 +37.8	116.4		50 27.4 +38.9	117.5		49 59.2 +40.0	118.5		49 30.1 +41.1	119.6		49 00.0 +42.1	120.6		48 29.0 +43.1	121.5		10
11	52 21.1 +34.5	112.8		51 57.3 +35.7	114.0		51 32.3 +37.0	115.1		51 06.3 +38.2	116.3		50 39.2 +39.3	117.4		50 11.2 +40.4	118.4		49 42.1 +41.5	119.5		49 12.1 +42.5	120.5		11
12	52 55.6 +33.5	111.5		52 33.0 +34.9	112.7		52 09.3 +36.2	113.9		51 44.5 +37.4	115.0		51 18.5 +38.6	116.2		50 51.6 +39.7	117.3		50 23.6 +40.8	118.4		49 54.6 +41.8	119.4		12
13	53 29.1 +32.5	110.1		53 07.9 +33.9	111.3		52 45.5 +35.2	112.6		52 21.9 +36.5	113.8		51 57.1 +37.8	114.9		51 31.3 +38.1	116.1		51 04.4 +40.1	117.2		50 36.4 +41.2	118.3		13
14	54 01.6 +31.5	108.7		53 41.8 +32.9	109.9		53 20.7 +34.3	111.2		52 58.4 +35.6	112.5		52 34.9 +36.9	113.7		52 10.2 +38.2	114.8		51 44.5 +39.3	116.0		51 17.6 +40.5	117.1		14
15	54 33.1 +30.5	107.2		54 14.7 +31.9	108.5		53 55.0 +33.3	109.8		53 34.0 +34.7	111.1		53 11.8 +36.1	112.4		52 48.4 +37.3	113.6		52 23.8 +38.6	114.8		51 58.1 +39.8	115.9		15
16	55 03.6 +29.2	105.7		54 46.6 +30.8	107.1		54 28.3 +32.3	108.4		54 08.7 +33.8	109.7		53 47.9 +35.1	111.0		53 25.7 +36.5	112.3		53 02.4 +37.7	113.5		52 37.9 +38.9	114.7		16
17	55 32.8 +28.2	104.2		55 17.4 +29.7	105.6		55 00.6 +31.3	106.9		54 42.5 +32.7	108.3		54 23.0 +34.1	109.6		54 02.2 +35.5	110.9		53 40.1 +36.9	112.2		53 16.8 +38.2	113.5		17
18	56 01.0 +26.9	102.6		55 47.1 +28.6	104.0		55 31.9 +30.1	105.5		55 15.2 +31.6	106.8		54 57.1 +33.1	108.2		54 37.7 +34.6	109.6		54 17.0 +35.9	110.9		53 55.0 +37.2	112.1		18
19	56 27.9 +25.6	101.0		56 15.7 +27.2	102.5		56 02.0 +28.9	103.9		55 46.8 +30.5	105.3		55 30.2 +32.1	106.7		55 12.3 +33.5	108.1		54 52.9 +35.0	109.5		54 32.2 +36.4	110.8		19
20	56 53.5 +24.3	99.3		56 42.9 +26.1	100.8		56 30.9 +27.7	102.3		56 17.3 +29.4	103.8		56 02.3 +30.9	105.2		55 45.8 +32.4	106.7		55 27.9 +33.9	108.1		55 08.6 +35.4	109.4		20
21	57 17.8 +22.9	97.7		57 09.0 +24.6	99.2		56 58.6 +26.4	100.7		56 46.7 +28.0	102.2		56 33.2 +29.7	103.7		56 18.2 +31.4	105.2		56 01.8 +32.9	106.6		55 44.0 +34.4	108.0		21
22	57 40.7 +21.4	95.9		57 33.6 +23.3	97.5		57 25.0 +25.1	99.1		57 14.7 +26.9	100.6		57 02.9 +28.5	102.1		56 49.6 +30.1	103.6		56 34.7 +31.8	105.1		56 18.4 +33.3	106.5		22
23	58 02.1 +20.0	94.2		57 56.9 +21.9	95.8		57 50.1 +23.6	97.4		57 41.6 +25.4	98.9		57 31.4 +27.3	100.5		57 19.7 +28.9	102.0		57 06.5 +30.5	103.5		56 51.7 +32.1	105.0		23
24	58 22.1 +18.5	92.4		58 18.8 +20.4	94.0		58 13.7 +22.3	95.6		58 07.0 +24.1	97.2		57 58.7 +25.8	98.8		57 48.6 +26.7	100.4		57 37.0 +29.4	101.9		57 23.8 +31.0	103.5		24
25	58 40.6 +16.9	90.6		58 39.2 +18.8	92.2		58 36.0 +20.7	93.9		58 31.1 +22.6	95.5		58 24.5 +24.5	97.1		58 16.3 +26.2	98.7		58 06.4 +28.0	100.3		57 54.8 +29.8	101.9		25
26	58 57.5 +15.3	88.7		58 58.0 +17.2	90.4		58 56.7 +19.2	92.0		58 53.7 +21.1	93.7		58 49.0 +23.0	95.4		58 42.5 +24.9	97.0		58 34.4 +26.7	98.6		58 24.6 +28.4	100.2		26
27	59 12.8 +13.6	86.8		59 15.2 +15.7	88.5		59 15.9 +17.6	90.2		59 14.8 +19.6	91.9		59 12.0 +21.5	93.6		59 07.4 +23.4	95.2		59 01.1 +25.2	96.9		58 53.0 +27.1	98.5		27
28	59 26.4 +12.0	84.9		59 30.9 +13.9	86.6		59 33.5 +16.0	88.3		59 34.4 +17.9	90.0		59 33.5 +19.9	91.7		59 30.8 +21.8	93.4		59 26.3 +23.8	95.6		59 20.1 +25.6	96.8		28
29	59 38.4 +10.2	83.0		59 44.8 +12.3	84.7		59 49.5 +14.3	86.4		59 52.3 +16.3	88.1		59 53.4 +18.3	89.9		59 52.6 +20.3	91.6		59 50.1 +22.2	93.3		59 45.7 +24.2	95.0		29
30	59 48.6 +8.5	81.0		59 57.1 +10.5	82.7		60 03.8 +12.5	84.5		60 08.6 +14.6	86.2		60 11.7 +16.6	87.9		60 12.9 +18.7	89.7		60 12.3 +20.7	91.4		60 09.9 +22.6	93.2		30
31	59 57.1 +6.7	79.1		60 07.6 +8.7	80.8		60 16.3 +10.8	82.5		60 23.2 +12.9	84.2		60 28.3 +14.9	86.0		60 31.6 +16.8	87.8		60 33.0 +19.0	89.5		60 32.5 +21.1	91.3		31
32	60 03.8 +4.8	77.1		60 16.3 +6.9	78.8		60 27.1 +9.0	80.5		60 36.1 +11.0	82.3		60 43.2 +13.2	84.0		60 48.5 +15.3	85.8		60 52.0 +17.3	87.6		60 53.6 +19.3	89.4		32
33	60 08.6 +3.1	75.1		60 23.2 +5.1	76.8		60 36.1 +7.1	78.5		60 47.1 +9.3	80.3		60 56.4 +11.3	82.0		61 03.8 +13.4	83.8		61 09.3 +15.5	85.6		61 12.9 +17.6	87.4		33
34	60 11.7 +1.2	73.1		60 28.3 +3.3	74.8		60 43.2 +5.3	76.5		60 56.4 +7.4	78.2		61 07.7 +9.5	80.8		61 17.2 +11.6	81.8		61 24.8 +13.7	83.6		61 30.5 +15.9	85.4		34
35	60 12.9 -0.6	71.1		60 31.6 +1.4	72.7		60 48.5 +3.5	74.4		61 12.4 -4.0	75.8		61 36.1 -1.9	77.5		61 58.3 -0.0	79.2		61 46.4 +14.0	83.4		61 38.5 +11.9	85.6		35
36	60 12.3 -2.4	69.0		60 33.0 -0.5	70.7		60 52.0 +1.6	72.4		61 09.3 +3.6	74.1		61 24.8 +5.7	75.9		61 38.5 +7.9	77.7		61 50.4 +10.0	79.5		62 00.4 +12.1	81.3		36
37	60 09.9 -4.2	6																							

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 35° , 325°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z																						
0	45 11.2	-42.8	125.5	44 36.0	-43.7	126.3	44 00.1	-44.4	127.1	43 23.6	-45.2	127.9	42 46.4	-45.9	128.6	42 08.7	-46.6	129.3	41 30.4	-47.3	130.0	40 51.6	-47.9	130.7	0
1	44 28.4	-43.3	126.5	43 52.3	-44.1	127.3	43 15.7	-44.9	128.0	42 38.4	-45.6	128.8	42 00.5	-46.3	129.5	41 22.1	-47.0	130.2	40 43.1	-47.6	130.8	40 03.7	-48.3	131.5	1
2	43 45.1	-43.8	127.5	43 08.2	-44.5	128.2	42 30.8	-45.3	129.0	41 52.8	-46.0	129.7	41 14.2	-46.6	130.3	40 35.1	-47.3	131.0	39 55.5	-47.9	131.6	39 15.4	-48.5	132.2	2
3	43 01.3	-44.3	128.4	42 23.7	-45.0	129.1	41 45.5	-45.7	129.8	41 06.8	-46.4	130.5	40 27.6	-47.0	131.2	39 47.8	-47.6	131.8	39 07.6	-48.2	132.4	38 26.9	-48.8	133.0	3
4	42 17.0	-44.7	129.3	41 38.7	-45.4	130.0	40 59.8	-46.0	130.7	40 20.4	-46.7	131.4	39 40.6	-47.4	132.0	39 00.2	-47.9	132.6	38 19.4	-48.6	133.2	37 38.1	-49.1	133.7	4
5	41 32.3	-45.0	130.2	40 53.3	-45.8	130.9	40 13.8	-46.5	131.5	39 33.7	-47.0	132.2	38 53.2	-47.6	132.8	38 12.3	-48.3	133.4	37 30.8	-48.7	133.9	36 49.0	-49.3	134.5	5
6	40 47.3	-45.5	131.1	40 07.5	-46.1	131.8	39 27.3	-46.7	132.4	38 46.7	-47.4	133.0	38 05.6	-48.0	133.5	37 24.0	-48.5	134.1	36 42.1	-49.1	134.6	35 59.7	-49.6	135.2	6
7	40 01.8	-45.9	132.0	39 21.4	-46.5	132.6	38 40.6	-47.1	133.2	37 59.3	-47.7	133.8	37 17.6	-48.2	134.3	36 35.5	-48.8	134.8	35 53.0	-49.3	135.4	35 10.1	-49.8	135.9	7
8	39 15.9	-46.2	132.8	38 34.9	-46.8	133.4	37 53.5	-47.4	134.0	37 11.6	-47.9	134.5	36 29.4	-48.5	135.0	35 46.7	-49.0	135.6	35 03.7	-49.6	136.1	34 20.3	-50.0	136.5	8
9	38 29.7	-46.5	133.6	37 48.1	-47.1	134.2	37 06.1	-47.7	134.7	36 23.7	-48.3	135.3	35 40.9	-48.8	135.8	34 57.7	-49.3	136.3	34 14.1	-49.7	136.7	33 30.3	-50.3	137.2	9
10	37 43.2	-46.8	134.4	37 01.0	-47.4	135.0	36 18.4	-48.0	135.5	35 35.4	-48.5	136.0	34 52.1	-49.0	136.5	34 08.4	-49.5	137.0	33 24.4	-50.0	137.4	32 40.0	-50.4	137.9	10
11	36 56.4	-47.2	135.2	36 13.6	-47.7	135.7	35 30.4	-48.2	136.2	34 46.9	-48.7	136.7	34 03.1	-49.3	137.2	33 18.9	-49.7	137.6	32 34.4	-50.2	138.1	31 49.6	-50.6	138.5	11
12	36 09.2	-47.4	136.0	35 25.9	-48.0	136.5	34 42.2	-48.5	137.0	33 58.2	-49.0	137.4	33 13.8	-49.5	137.9	32 29.2	-50.0	138.3	31 44.2	-50.4	138.7	30 59.0	-50.8	139.1	12
13	35 21.8	-47.8	136.7	34 37.9	-48.2	137.2	33 53.7	-48.7	137.7	33 09.2	-49.2	138.1	32 24.3	-49.6	138.6	31 39.2	-50.1	139.0	30 53.8	-50.5	139.4	30 08.2	-51.0	139.7	13
14	34 34.0	-47.9	137.5	33 49.7	-48.5	137.9	33 05.0	-49.0	138.4	32 20.0	-49.5	138.8	31 34.7	-49.9	139.2	30 49.1	-50.3	139.6	30 03.3	-50.8	140.0	29 17.2	-51.1	140.3	14
15	33 46.1	-48.3	138.2	33 01.2	-48.8	138.6	32 16.0	-49.2	139.1	31 30.5	-49.6	139.5	30 44.8	-50.1	140.2	29 58.8	-50.5	140.6	28 26.1	-51.3	140.9	27 46.1	-51.6	141.3	15
16	32 57.8	-48.5	138.9	32 12.4	-48.9	139.3	31 26.8	-49.4	139.7	30 40.9	-49.9	140.1	29 54.7	-50.2	140.5	29 08.3	-50.7	140.9	28 21.6	-51.0	141.2	27 34.8	-51.5	141.5	16
17	32 09.3	-48.7	139.6	31 23.5	-49.1	140.0	30 37.4	-49.6	140.4	29 51.0	-50.0	140.8	29 04.5	-50.5	141.1	28 17.6	-50.8	141.5	27 30.6	-51.2	141.8	26 43.3	-51.5	142.1	17
18	31 20.6	-48.9	140.3	30 34.4	-49.4	140.7	29 47.8	-49.8	141.1	29 01.0	-50.2	141.4	28 14.0	-50.6	141.7	27 26.8	-51.0	142.1	26 39.4	-51.4	142.4	25 51.8	-51.8	142.7	18
19	30 31.7	-49.1	141.0	29 45.0	-49.5	141.3	28 58.0	-49.9	141.7	28 10.8	-50.3	142.0	27 23.4	-50.7	142.4	26 35.8	-51.1	142.7	25 48.0	-51.5	143.0	25 00.0	-51.8	143.2	19
20	29 42.6	-49.3	141.6	28 55.5	-49.8	142.0	28 08.1	-50.2	142.3	27 20.5	-50.5	142.6	26 32.7	-50.9	143.0	25 44.7	-51.3	143.2	24 56.5	-51.6	143.5	24 08.2	-51.9	143.8	20
21	28 53.3	-49.5	142.3	28 05.7	-49.9	142.6	27 17.9	-50.3	142.9	26 30.0	-50.7	143.2	25 41.8	-51.0	143.5	24 53.4	-51.3	143.8	24 04.9	-51.7	144.1	23 16.3	-52.1	144.3	21
22	28 03.8	-49.7	142.9	27 15.8	-50.0	143.3	26 27.6	-50.4	143.6	25 39.3	-50.8	143.8	24 50.8	-51.2	144.1	24 02.1	-51.6	144.4	23 13.2	-51.8	144.6	22 24.2	-52.2	144.9	22
23	27 14.1	-49.8	143.6	26 25.8	-50.3	143.9	25 37.2	-50.6	144.2	24 48.5	-51.0	144.4	23 59.6	-51.3	144.7	23 10.5	-51.6	144.9	22 21.4	-52.0	145.2	21 32.0	-52.2	145.4	23
24	26 24.3	-50.0	144.2	25 35.5	-50.3	144.5	24 46.6	-50.7	144.8	23 57.5	-51.0	145.0	23 08.3	-51.4	145.3	22 18.9	-51.7	145.5	21 29.4	-52.1	145.7	20 39.8	-52.4	145.9	24
25	25 34.3	-50.2	144.8	24 45.2	-50.6	145.1	23 55.9	-50.9	145.3	23 06.5	-51.2	145.6	22 16.9	-51.5	145.8	21 27.2	-51.9	146.0	20 37.3	-52.1	146.3	19 47.4	-52.5	146.5	25
26	24 44.1	-50.3	145.4	23 54.6	-50.6	145.7	23 05.0	-51.0	145.9	22 15.3	-51.4	146.2	21 25.4	-51.7	146.4	20 35.3	-51.9	146.6	19 45.2	-52.4	146.8	18 54.9	-52.5	147.0	26
27	23 53.8	-50.4	146.0	23 04.0	-50.8	146.3	22 14.0	-51.1	146.5	21 23.9	-51.4	146.7	20 33.7	-51.7	146.9	19 43.4	-52.0	147.1	18 52.9	-52.3	147.3	18 02.4	-52.6	147.5	27
28	23 03.4	-50.6	146.6	22 13.2	-50.9	146.8	21 22.9	-51.2	147.1	20 32.5	-51.5	147.3	19 42.0	-51.8	147.5	18 51.4	-52.2	147.6	17 09.6	-52.7	148.0	28			
29	22 12.8	-50.7	147.2	21 22.3	-51.0	147.4	20 31.7	-51.3	147.6	19 41.0	-51.6	147.8	18 50.2	-52.0	148.0	17 59.2	-52.2	148.2	17 08.2	-52.5	148.3	16 17.1	-52.8	148.5	29
30	21 22.1	-50.8	147.8	20 31.3	-51.1	148.0	19 40.4	-51.4	148.2	18 49.4	-51.8	148.3	17 58.2	-52.0	148.5	17 07.0	-52.3	148.7	16 15.7	-52.5	148.8	15 24.3	-52.8	149.0	30
31	20 31.3	-50.9	148.3	19 40.2	-51.2	148.5	18 49.0	-51.6	148.7	17 57.6	-51.8	148.9	16 06.2	-52.1	149.0	16 47.7	-52.3	149.2	15 23.2	-52.7	149.3	14 31.5	-52.9	149.5	31
32	19 40.4	-51.0	148.9	18 49.0	-51.4	149.1	17 57.4	-51.6	149.2	17 05.8	-51.9	149.4	16 14.1	-52.1	149.6	15 22.4	-52.5	149.7	14 30.5	-52.7	149.8	13 38.6	-52.9	150.0	32
33	18 49.4	-51.2	149.5	17 57.6	-51.4	149.6	17 05.8	-51.7	149.8	16 13.9	-51.9	149.9	15 22.0	-52.3	150.1	14 29.9	-52.4	150.2	13 37.8	-52.7	150.3	12 45.7	-53.0	150.4	33
34	17 58.2	-51.2	150.0	16 06.2	-51.5	150.2	15 22.4	-51.9	150.3	15 02.5	-52.1	150.5	14 29.7	-52.6	150.6	13 37.5	-52.6	150.7	12 45.1	-52.8	150.8	11 52.7	-53.1	150.9	34
35	17 07.0	-51.3	150.6	16 14.7	-51.9	150.7	15 22.4	-52.4	151.1	15 03.5	-52.8	151.2	14 24.9	-52.6	151.2	11 52.3	-52.7	151.7	10 59.4	-52.9	151.8	10 06.5	-53.1	151.9	35
36	16 15.7	-51.4	151.1	15 23.2	-51.7	151.2	14 30.5	-51.9	151.4	13 37.8	-52.1	151.5	12 45.1	-52.4	151.6	11 52.3	-52.7	151.7	10 59.4	-52.9					

36°, 324° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z																						
0	44 28.7 +41.7	124.5		43 54.3 +42.6	125.3		43 19.3 +43.4	126.1		42 43.6 +44.2	126.9		42 07.3 +45.0	127.6		41 30.4 +45.8	128.3		40 52.9 +46.5	129.0		40 14.9 +47.2	129.6		0
1	45 10.4 +41.3	123.5		44 36.9 +42.2	124.4		44 02.7 +43.0	125.2		43 27.8 +43.9	125.9		42 52.3 +44.6	126.7		42 16.2 +45.3	127.4		41 39.4 +46.1	128.1		41 02.1 +46.8	128.8		1
2	45 51.7 +40.6	122.5		45 19.1 +41.5	123.3		44 45.7 +42.5	124.2		44 11.7 +43.3	125.0		43 36.9 +44.2	125.8		43 01.5 +45.0	126.5		42 25.5 +45.7	127.3		41 48.9 +46.4	128.0		2
3	46 32.3 +40.1	121.4		46 00.6 +41.0	122.3		45 28.2 +41.9	123.2		44 55.0 +42.8	124.0		44 21.1 +43.6	124.8		43 46.5 +44.4	125.6		43 11.2 +45.3	126.4		42 35.3 +46.0	127.1		3
4	47 12.4 +39.4	120.3		46 41.6 +40.4	121.3		46 10.1 +41.4	122.1		45 37.8 +42.3	123.0		45 04.7 +43.2	123.9		44 30.9 +44.1	124.7		43 56.5 +44.8	125.5		42 21.3 +45.6	126.3		4
5	47 51.8 +38.7	119.2		47 22.0 +39.8	120.2		46 51.5 +40.7	121.1		46 20.1 +41.7	122.0		45 47.9 +42.6	122.9		45 15.0 +43.5	123.7		44 41.3 +44.4	124.6		44 06.9 +45.2	125.4		5
6	48 30.5 +38.1	118.1		48 01.8 +39.1	119.1		47 32.2 +40.2	120.0		47 01.8 +41.1	120.9		46 30.5 +42.1	121.9		45 58.5 +43.0	122.7		45 25.7 +43.8	123.6		44 52.1 +44.7	124.4		6
7	49 08.6 +37.3	116.9		48 40.9 +38.5	117.9		48 12.4 +39.5	118.9		47 42.9 +40.6	119.9		47 12.6 +41.5	120.8		46 41.5 +42.4	121.7		46 09.5 +43.4	122.6		45 36.8 +44.2	123.5		7
8	49 45.9 +36.5	115.7		49 19.4 +37.7	116.7		48 51.9 +38.8	117.8		48 23.5 +39.8	118.7		47 54.1 +40.9	119.7		47 23.9 +41.9	120.7		46 52.9 +42.8	121.6		46 21.0 +43.8	122.5		8
9	50 22.4 +35.4	114.5		49 57.1 +36.9	115.5		49 30.7 +38.1	116.6		49 03.3 +39.2	117.6		48 35.0 +40.3	118.6		48 05.8 +41.3	119.6		47 35.7 +42.3	120.6		47 04.8 +43.2	121.5		9
10	50 58.2 +34.9	113.2		50 34.0 +36.1	114.3		50 08.8 +37.3	115.4		49 42.5 +38.5	116.5		49 15.3 +39.6	117.5		48 47.1 +40.6	118.5		48 18.0 +41.6	119.5		47 48.0 +42.6	120.5		10
11	51 33.1 +34.0	111.9		51 10.1 +35.3	113.0		50 46.1 +36.5	114.2		50 21.0 +37.7	115.3		49 54.9 +38.8	116.4		49 27.7 +40.0	117.4		48 59.6 +41.0	118.4		48 30.6 +42.0	119.4		11
12	52 07.1 +33.1	110.6		51 45.4 +34.4	111.7		51 22.6 +35.7	112.9		50 58.7 +36.9	114.1		50 33.7 +38.1	115.2		50 07.7 +39.2	116.3		49 40.6 +40.4	117.3		49 12.6 +41.4	118.3		12
13	52 40.2 +32.1	109.2		52 19.8 +33.5	110.4		51 58.3 +34.8	111.6		51 35.6 +36.1	112.8		51 11.8 +37.3	113.9		50 46.9 +38.5	115.1		50 21.0 +39.6	116.2		49 54.0 +40.8	117.2		13
14	53 12.3 +31.1	107.8		52 53.3 +32.5	109.0		52 33.1 +33.9	110.3		52 11.7 +35.2	111.5		51 49.1 +36.5	112.7		51 25.4 +37.8	113.8		51 00.6 +39.0	115.0		50 34.8 +40.0	116.1		14
15	53 43.4 +30.0	106.4		53 25.8 +31.5	107.6		53 07.0 +32.9	108.9		52 46.9 +34.3	110.2		52 25.6 +35.7	111.4		52 03.2 +36.9	112.6		51 39.6 +38.1	113.8		51 14.8 +39.4	114.9		15
16	54 13.4 +29.0	104.9		53 57.3 +30.5	106.2		53 39.9 +32.0	107.5		53 21.2 +33.4	108.8		53 01.3 +34.7	110.1		52 40.1 +36.0	111.3		52 17.7 +37.3	112.5		51 54.2 +38.5	113.7		16
17	54 42.4 +27.8	103.4		54 27.8 +29.4	104.7		54 11.9 +30.8	106.1		53 54.6 +32.3	107.4		53 36.0 +33.7	108.7		53 16.1 +35.1	110.0		52 55.0 +36.5	111.2		52 32.7 +37.7	112.4		17
18	55 10.2 +26.6	101.8		54 57.2 +28.2	103.2		54 42.7 +29.8	104.6		54 26.9 +31.3	106.0		54 09.7 +32.8	107.3		53 51.2 +34.2	108.6		53 31.5 +35.5	109.9		53 10.4 +36.9	111.1		18
19	55 36.8 +25.3	100.3		55 25.4 +27.0	101.7		55 12.5 +28.6	103.1		54 58.2 +30.2	104.5		54 42.5 +31.7	105.9		54 25.4 +32.3	107.2		54 07.0 +34.6	108.5		53 47.3 +36.0	109.8		19
20	56 02.1 +24.1	98.6		55 52.4 +25.7	100.1		55 41.1 +27.4	101.5		55 28.4 +29.0	103.0		55 14.2 +30.6	104.4		54 58.6 +32.1	105.8		54 41.6 +33.6	107.1		54 23.3 +35.0	108.5		20
21	56 26.2 +22.7	97.0		56 18.1 +24.5	98.5		56 08.5 +26.2	100.0		55 57.4 +27.8	101.4		55 44.8 +29.4	102.9		55 30.7 +31.0	104.3		55 15.2 +32.5	105.7		54 58.3 +34.0	107.1		21
22	56 48.9 +21.4	95.3		56 42.6 +23.1	96.8		56 34.7 +24.9	98.3		56 25.2 +26.6	99.8		56 12.4 +28.3	101.3		56 01.7 +29.9	102.8		55 47.7 +31.5	104.2		55 32.3 +33.0	105.6		22
23	57 10.3 +19.9	93.6		57 05.7 +21.8	95.1		56 59.6 +23.5	96.7		56 51.8 +25.3	98.2		56 42.5 +26.9	99.7		56 31.6 +28.6	101.2		56 19.2 +30.3	102.7		56 05.3 +31.8	104.1		23
24	57 30.2 +18.5	91.8		57 27.5 +20.3	93.4		57 23.1 +22.1	95.0		57 17.1 +23.9	96.5		57 09.4 +25.7	98.1		57 00.2 +27.4	99.6		56 49.5 +29.0	101.1		56 37.1 +30.8	102.6		24
25	57 48.7 +16.9	90.1		57 47.8 +18.8	91.7		57 45.2 +20.7	93.2		57 41.0 +22.5	94.8		57 35.1 +24.3	96.4		57 27.6 +26.1	97.9		57 18.5 +27.8	99.5		57 07.9 +29.4	101.0		25
26	58 05.6 +15.2	88.3		58 06.6 +17.2	89.9		58 05.9 +19.1	91.5		58 03.5 +21.0	93.1		57 59.4 +22.9	94.7		57 53.7 +24.7	96.3		57 46.3 +26.5	97.8		57 37.3 +28.3	99.4		26
27	58 20.9 +13.8	86.4		58 23.8 +15.7	88.0		58 25.0 +17.7	89.7		58 24.5 +19.6	91.3		58 22.3 +21.4	92.9		58 18.4 +23.3	94.5		58 12.8 +25.1	96.1		58 05.6 +26.9	97.7		27
28	58 34.7 +12.1	84.6		58 39.5 +14.1	86.2		58 42.7 +16.0	87.8		58 44.1 +18.0	89.5		58 43.7 +20.0	91.1		58 41.7 +21.8	92.8		58 37.9 +23.7	94.4		58 32.5 +25.5	96.0		28
29	58 46.8 +10.5	82.7		58 53.6 +12.5	84.3		58 58.7 +14.4	86.0		59 02.1 +16.3	87.6		59 03.7 +18.3	89.3		59 03.5 +20.3	91.0		59 01.6 +22.2	92.6		58 58.0 +24.1	94.3		29
30	58 57.3 +8.8	80.8		59 06.1 +10.7	82.4		59 13.1 +12.8	84.1		59 18.4 +14.8	85.8		59 22.0 +16.7	87.4		59 23.8 +18.7	89.1		59 23.8 +20.7	90.8		59 22.1 +22.5	92.5		30
31	59 06.1 +7.0	78.8		59 16.8 +9.1	80.5		59 25.9 +11.0	82.2		59 33.2 +13.0	83.9		59 38.7 +15.1	85.6		59 42.5 +17.0	87.3		59 44.5 +19.0	89.0		59 44.6 +21.0	90.7		31
32	59 13.1 +5.3	76.9		59 25.9 +7.3	78.6		59 36.9 +9.3	80.2		59 46.2 +11.3	81.9		59 53.8 +13.3	83.6		59 59.5 +15.4	85.3		60 03.5 +17.4	87.1		60 05.6 +19.4	88.8		32
33	59 18.4 +3.6	75.0		59 33.2 +5.5	76.6		59 46.2 +7.6	78.3		59 57.5 +9.6	80.0		60 07.1 +11.6	81.7		60 14.9 +13.7	83.4		60 20.9 +15.7	85.2		60 25.0 +17.8	86.9		33
34	59 22.0 +1.8	73.0		59 38.7 +3.8	74.6		59 18.0 +13.9	74.5		59 52.2 +12.2	75.9		60 25.5 +10.2	75.3		60 56.9 +8.7	78.9		60 28.6 +11.8	81.4		60 36.8 +13.9	83.2		34
35	59 23.8 0.0	71.0		59 42.5 +2.0	72.7		59 59.5 +4.0	74.3		60 14.9 +6.0	76.0		60 28.6 +8.0	77.7		60 40.4 +10.1	79.4		60 50.5 +12.2	81.2		60 58.8 +14.2	83.0		35
36	59 23.8 -1.7	69.1		59 44.5 +0.1	70.7		60 03.5 +2.1	72.3		60 20.9 +4.1	74.0		60 36.6 +6.2	75.7		60 50.5 +8.3	77.4		61 02.7 +10.3	79.2		61 13.0 +12.5	81.0		36
37</td																									

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 36° , 324°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z																						
0	44 28.7	-42.4	124.5	43 54.3	-43.1	125.3	43 19.3	-44.0	126.1	42 43.6	-44.7	126.9	42 07.3	-45.4	127.6	41 30.4	-46.1	128.3	40 52.9	-46.8	129.0	40 14.9	-47.4	129.6	0
1	43 46.3	-42.8	125.5	43 11.2	-43.6	126.3	42 35.3	-44.3	127.0	41 58.9	-45.1	127.8	41 21.9	-45.9	128.5	40 44.3	-46.5	129.1	40 06.1	-47.1	129.8	39 27.5	-47.8	130.4	1
2	43 03.5	-43.2	126.5	42 27.6	-44.1	127.2	41 51.0	-44.8	127.9	41 13.8	-45.5	128.6	40 36.0	-46.2	129.3	39 57.8	-46.9	130.0	39 19.0	-47.5	130.6	38 39.7	-48.1	131.2	2
3	42 20.3	-43.8	127.4	41 43.5	-44.5	128.1	41 06.2	-45.2	128.8	40 28.3	-45.9	129.5	39 49.8	-46.5	130.2	39 10.9	-47.2	130.8	38 31.5	-47.8	131.4	37 51.6	-48.4	132.0	3
4	41 36.5	-44.1	128.4	40 59.0	-44.8	129.0	40 21.0	-45.6	129.7	39 42.4	-46.3	130.3	39 03.3	-46.9	131.0	38 23.7	-47.5	131.6	37 43.7	-48.1	132.2	37 03.2	-48.7	132.7	4
5	40 52.4	-44.6	129.3	40 14.2	-45.2	129.9	39 35.4	-45.9	130.6	38 56.1	-46.5	131.2	38 16.4	-47.2	131.8	37 36.2	-47.8	132.3	36 55.6	-48.4	132.9	36 14.5	-48.9	133.4	5
6	40 07.8	-44.9	130.1	39 28.9	-45.6	130.8	38 49.5	-46.3	131.4	38 09.6	-46.9	132.0	37 29.2	-47.5	132.5	36 48.4	-48.1	133.1	36 07.2	-48.6	133.6	35 25.6	-49.2	134.2	6
7	39 22.9	-45.4	131.0	38 43.3	-46.0	131.6	38 03.2	-46.6	132.2	37 22.7	-47.2	132.8	36 41.7	-47.8	133.3	36 00.3	-48.3	133.8	35 18.6	-48.9	134.4	34 36.4	-49.4	134.9	7
8	38 37.5	-45.7	131.8	37 57.3	-46.4	132.4	37 16.6	-47.0	133.0	36 35.5	-47.6	133.5	35 53.9	-48.0	134.1	34 12.0	-48.6	134.6	34 29.7	-49.1	135.1	33 47.0	-49.6	135.5	8
9	37 51.8	-46.0	132.7	37 10.9	-46.6	133.2	36 29.6	-47.2	133.8	35 47.9	-47.7	134.3	35 05.9	-48.4	134.8	34 23.4	-48.9	135.3	33 40.6	-49.4	135.8	32 57.4	-49.8	136.2	9
10	37 05.8	-46.4	133.5	36 24.3	-46.8	134.0	35 42.4	-47.5	134.5	35 00.2	-48.1	135.0	34 17.5	-48.5	135.5	33 34.5	-49.0	136.0	32 51.2	-49.5	136.4	32 07.6	-50.1	136.9	10
11	36 19.4	-46.6	134.3	35 37.4	-47.3	134.8	34 54.9	-47.7	135.3	34 12.1	-48.3	135.8	33 29.0	-48.9	136.2	32 45.5	-49.3	136.7	32 01.7	-49.8	137.1	31 17.5	-50.2	137.5	11
12	35 32.8	-47.0	135.0	34 50.1	-47.5	135.5	34 07.2	-48.1	136.0	33 23.8	-48.5	136.5	32 40.1	-49.0	136.9	31 56.2	-49.5	137.4	31 11.9	-50.0	137.8	30 27.3	-50.4	138.2	12
13	34 45.8	-47.2	135.8	34 02.6	-47.7	136.3	33 19.1	-48.3	136.7	32 35.3	-48.8	137.2	31 51.1	-49.2	137.6	31 06.7	-49.8	138.0	30 21.9	-50.1	138.4	29 36.9	-50.6	138.8	13
14	33 58.6	-47.5	136.5	33 14.9	-48.0	137.0	32 30.8	-48.5	137.4	31 46.5	-49.0	137.9	31 01.9	-49.5	138.3	30 16.9	-49.9	138.7	29 31.8	-50.4	139.0	28 46.3	-50.7	139.4	14
15	33 11.1	-47.7	137.3	32 26.9	-48.3	137.7	31 42.3	-48.7	138.1	30 57.5	-49.2	138.5	30 12.4	-49.6	138.9	29 27.0	-50.0	139.3	28 41.4	-50.5	139.7	27 55.6	-50.9	140.0	15
16	32 23.4	-48.0	138.0	31 38.6	-48.5	138.4	30 53.6	-48.9	138.8	30 08.3	-49.4	139.2	29 22.8	-49.9	139.6	28 37.0	-50.3	139.9	27 50.9	-50.8	140.3	27 04.7	-51.1	140.6	16
17	31 35.4	-48.3	138.7	30 50.1	-48.6	139.1	30 04.7	-49.2	139.5	29 18.9	-49.6	139.9	28 32.9	-50.0	140.2	27 46.7	-50.4	140.6	27 00.3	-50.9	140.9	26 13.6	-51.2	141.2	17
18	30 47.1	-48.4	139.4	30 01.5	-48.9	139.8	29 15.5	-49.3	140.2	28 29.3	-49.7	140.5	27 42.9	-50.2	140.8	26 56.3	-50.6	141.2	26 09.4	-50.8	141.5	25 22.4	-51.3	141.8	18
19	29 58.7	-48.6	140.1	29 12.6	-49.1	140.5	28 26.2	-49.5	140.8	27 39.6	-50.0	141.1	26 52.7	-50.3	141.5	26 05.7	-50.7	141.8	25 18.5	-51.1	142.1	24 31.1	-51.5	142.3	19
20	29 10.1	-48.9	140.8	28 23.5	-49.3	141.1	27 36.7	-49.7	141.4	26 49.6	-50.1	141.8	26 02.4	-50.5	142.1	25 15.0	-50.9	142.4	24 27.4	-51.2	142.6	23 39.6	-51.6	142.9	20
21	28 21.2	-49.0	141.4	27 34.2	-49.5	141.8	26 47.0	-49.9	142.1	25 59.5	-50.2	142.4	25 11.9	-50.6	142.7	24 24.1	-51.0	142.9	23 36.2	-51.4	143.2	22 48.0	-51.7	143.5	21
22	27 32.2	-49.2	142.1	26 44.7	-49.6	142.4	25 57.1	-50.0	142.7	25 09.3	-50.4	143.0	24 21.3	-50.8	143.3	23 33.1	-51.1	143.5	22 44.8	-51.5	143.8	21 56.3	-51.8	144.0	22
23	26 43.0	-49.4	142.7	25 55.1	-49.8	143.0	25 07.1	-50.2	143.3	24 18.9	-50.5	143.6	23 30.5	-50.8	143.8	22 42.0	-51.2	144.1	21 53.3	-51.5	144.3	21 04.5	-51.9	144.6	23
24	25 53.6	-49.6	143.4	25 05.3	-49.9	143.6	24 16.9	-50.3	143.9	23 28.4	-50.7	144.2	22 39.7	-51.1	144.4	21 50.8	-51.4	144.7	21 01.8	-51.7	144.9	20 12.6	-52.0	145.1	24
25	25 04.0	-49.7	144.0	24 15.4	-50.1	144.2	23 26.6	-50.4	144.5	22 37.7	-50.8	144.8	21 48.6	-51.1	145.0	20 59.4	-51.4	145.2	20 10.1	-51.8	145.4	19 20.6	-52.1	145.6	25
26	24 14.3	-49.8	144.6	23 25.3	-50.2	144.8	22 36.2	-50.6	145.1	21 46.9	-50.9	145.3	20 57.5	-51.2	145.5	20 08.0	-51.6	145.8	19 18.3	-52.1	146.0	18 28.5	-52.1	146.2	26
27	23 24.5	-50.0	145.2	22 35.1	-50.3	145.4	21 45.6	-50.7	145.7	20 56.0	-51.0	145.9	20 06.3	-51.4	146.1	19 16.4	-51.6	146.3	18 26.4	-51.9	146.5	17 36.4	-52.3	146.7	27
28	23 34.5	-50.2	145.8	21 44.8	-50.5	146.0	20 54.9	-50.8	146.2	20 05.0	-51.1	146.5	19 14.9	-51.4	146.7	18 24.8	-51.8	146.8	17 34.5	-52.1	147.0	16 44.1	-52.3	147.2	28
29	21 44.3	-50.2	146.4	20 54.3	-50.6	146.6	20 04.1	-50.9	146.8	19 13.9	-51.2	147.0	18 23.5	-51.5	147.2	17 33.0	-51.8	147.4	16 42.4	-52.1	147.5	15 51.8	-52.4	147.7	29
30	20 54.1	-50.4	147.0	20 03.7	-50.7	147.2	19 13.2	-51.0	147.4	18 22.7	-51.4	147.6	17 32.0	-51.6	147.7	16 41.2	-51.9	147.9	15 50.3	-52.2	148.1	14 59.4	-52.5	148.2	30
31	20 03.7	-50.5	147.6	19 13.0	-50.8	147.8	18 22.2	-51.1	147.9	17 31.3	-51.4	148.1	16 40.4	-51.7	148.3	15 49.3	-52.0	148.4	14 58.1	-52.5	148.7	13 06.9	-52.5	148.8	31
32	19 13.2	-50.5	148.1	18 22.2	-50.9	148.3	17 31.1	-51.2	148.5	16 39.9	-51.5	148.6	15 48.7	-51.8	148.8	14 57.3	-52.1	148.9	14 05.9	-52.4	149.1	13 14.4	-52.6	149.2	32
33	18 22.7	-50.7	148.7	17 31.3	-50.9	148.9	16 39.9	-51.2	149.0	15 48.4	-51.5	149.2	14 56.9	-51.9	149.3	14 05.0	-51.7	149.5	13 13.5	-52.3	149.6	12 21.8	-52.5	149.7	33
34	17 32.0	-50.8	149.3	16 40.4	-51.5	149.5	15 47.3	-51.8	149.6	14 56.9	-52.2	149.7	13 05.0	-52.4	150.0	12 21.9	-52.5	150.0	11 29.1	-52.7	150.2	10 51.2	-53.0	150.3	34
35	16 41.2	-51.4	150.8	15 45.3	-51.4	150.1	14 05.2	-51.7	150.2	13 13.1	-51.9	150.4	12 20.9	-52.2	150.5	11 28.7	-52.5	150.6	10 36.4	-52.7	150.7	9 43.7	-52.8	151.2	35
36	15 50.3	-50.9	150.4	14 58.1	-51.2	150.5	14 05.9	-51.5	150.6	13 13.5	-51.7	150.8	12 21.2	-52.1	150.9	11 28.3	-52.5	151.							

37°, 323° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Dec.
0	43 45.6 +41.3	123.6		43 12.1 +42.1	124.4		42 37.9 +43.0	125.1		42 03.1 +43.7	125.9		41 27.6 +44.6	126.6		40 51.6 +45.3	127.3		40 14.9 +46.1	128.0		39 37.8 +46.7	128.6		0
1	44 26.9 +40.7	122.6		43 54.2 +41.6	123.4		43 20.9 +42.5	124.2		42 46.8 +43.4	124.9		42 12.2 +44.1	125.7		41 36.9 +44.9	126.4		41 01.0 +45.6	127.1		40 24.5 +46.3	127.8		1
2	45 07.6 +40.1	121.5		44 35.8 +41.1	122.4		44 03.4 +41.9	123.2		43 30.2 +42.8	124.0		42 56.3 +43.7	124.8		42 21.8 +44.4	125.5		41 46.6 +45.2	126.2		41 10.8 +46.0	127.0		2
3	45 47.7 +39.6	120.5		45 16.9 +40.5	121.3		44 45.3 +41.5	122.2		44 13.0 +42.4	123.0		43 40.0 +43.2	123.8		43 06.2 +44.1	124.6		42 31.8 +44.9	125.4		41 56.8 +45.6	126.1		3
4	46 27.3 +38.9	119.4		45 57.4 +40.0	120.3		45 26.8 +40.9	121.2		44 55.4 +41.8	122.0		44 23.2 +42.7	122.9		43 50.3 +43.5	123.7		43 16.7 +44.4	124.5		42 42.4 +45.2	125.2		4
5	47 06.2 +38.3	118.3		46 37.4 +39.3	119.2		46 07.7 +40.3	120.1		45 37.2 +41.2	121.0		45 05.9 +42.2	121.9		44 33.8 +43.1	122.7		44 01.1 +43.9	123.5		43 27.6 +44.7	124.3		5
6	47 44.5 +37.5	117.1		47 16.7 +38.6	118.1		46 48.0 +39.6	119.0		46 18.4 +40.7	120.0		45 48.1 +41.6	120.8		45 16.9 +42.6	121.7		44 45.0 +43.4	122.6		44 12.3 +44.3	123.4		6
7	48 22.0 +36.9	116.0		47 55.3 +37.9	117.0		47 27.6 +39.1	117.9		46 59.1 +40.0	118.9		46 29.7 +41.0	119.8		45 59.5 +42.0	120.7		45 28.4 +42.9	121.6		44 56.6 +43.8	122.4		7
8	48 58.9 +36.1	114.8		48 33.2 +37.3	115.8		48 06.7 +38.3	116.8		47 39.1 +39.5	117.8		47 10.7 +40.5	118.7		46 41.5 +41.4	119.7		46 11.3 +42.4	120.6		45 40.4 +43.3	121.5		8
9	49 35.0 +35.2	113.5		49 10.5 +36.5	114.6		48 45.0 +37.6	115.6		48 18.6 +38.7	116.7		47 51.2 +39.8	117.6		47 22.9 +40.8	118.6		46 53.7 +41.8	119.6		46 23.7 +42.8	120.5		9
10	50 10.2 +34.5	112.3		49 47.0 +35.6	113.4		49 22.6 +36.9	114.5		48 57.3 +38.0	115.5		48 31.0 +39.1	116.5		48 03.7 +40.2	117.5		47 35.5 +41.2	118.5		47 06.5 +42.2	119.5		10
11	50 44.7 +33.6	111.0		50 22.6 +34.9	112.1		49 59.5 +36.1	113.2		49 35.3 +37.3	114.3		49 10.1 +38.4	115.4		48 43.9 +39.5	116.4		48 16.7 +40.6	117.4		47 48.7 +41.6	118.4		11
12	51 18.3 +32.7	109.7		50 57.5 +34.0	110.8		50 35.6 +35.3	112.0		50 12.6 +36.5	113.1		49 48.5 +37.7	114.2		49 23.4 +38.8	115.3		49 57.3 +39.9	116.3		48 30.3 +40.9	117.3		12
13	51 51.0 +31.7	108.3		51 31.5 +33.1	109.5		51 10.9 +34.4	110.7		50 49.1 +35.6	111.9		50 26.2 +36.9	113.0		50 02.2 +38.1	114.1		49 37.2 +39.3	115.2		49 11.2 +40.4	116.2		13
14	52 22.7 +30.7	106.9		52 04.6 +32.1	108.2		51 45.3 +33.4	109.4		51 24.7 +34.9	110.6		51 03.1 +36.1	111.7		50 40.3 +37.3	112.9		50 16.5 +38.5	114.0		49 51.6 +39.6	115.1		14
15	52 53.4 +29.7	105.5		52 36.7 +31.2	106.8		52 18.7 +32.6	108.0		51 59.6 +33.9	109.3		51 39.2 +35.2	110.5		51 17.6 +36.5	111.6		50 55.0 +37.7	112.8		50 31.2 +38.9	113.9		15
16	53 23.1 +28.6	104.1		53 07.9 +30.1	105.4		52 51.3 +31.6	106.7		52 33.5 +32.9	107.9		52 14.4 +34.3	109.1		51 54.1 +35.7	110.3		51 32.7 +36.9	111.5		51 10.1 +38.2	112.7		16
17	53 51.7 +27.6	102.6		53 38.0 +29.0	103.9		53 22.9 +30.5	105.2		53 06.4 +32.0	106.5		52 48.7 +33.4	107.8		52 29.8 +34.7	109.0		52 09.6 +36.1	110.3		51 48.3 +37.3	111.5		17
18	54 19.3 +26.3	101.1		54 07.0 +27.9	102.4		53 53.4 +29.5	103.8		53 38.4 +31.0	105.1		52 22.1 +32.4	106.4		53 04.5 +33.9	107.7		52 45.7 +35.2	108.9		52 25.6 +36.5	110.2		18
19	54 45.6 +25.1	99.5		54 34.9 +26.8	100.9		54 22.9 +28.3	102.3		54 09.4 +29.9	103.7		53 54.5 +31.4	105.0		53 38.4 +32.6	106.3		53 20.9 +34.2	107.6		53 02.1 +35.6	108.9		19
20	55 10.7 +23.9	98.0		55 01.7 +25.5	99.4		54 51.2 +27.2	100.8		54 39.3 +28.7	102.2		54 25.9 +30.3	103.5		54 11.2 +31.8	104.9		53 55.1 +33.3	106.2		53 37.7 +34.7	107.5		20
21	55 34.6 +22.6	96.3		55 27.2 +24.3	97.8		55 18.4 +25.9	99.2		55 08.0 +27.6	100.6		54 56.2 +29.2	102.0		54 43.0 +30.7	103.4		54 28.4 +32.2	104.8		54 12.4 +33.7	106.1		21
22	55 57.2 +21.2	94.7		55 51.5 +23.0	96.2		55 44.3 +24.7	97.6		55 35.6 +26.3	99.1		55 25.4 +28.0	100.5		55 13.7 +29.6	101.9		55 00.6 +31.1	103.3		54 46.1 +32.6	104.7		22
23	56 18.4 +19.9	93.0		56 14.5 +21.6	94.5		56 09.0 +23.4	96.0		56 01.9 +25.1	97.5		55 53.4 +26.8	98.9		55 43.3 +28.4	100.4		55 31.7 +30.1	101.8		55 18.7 +31.6	103.2		23
24	56 38.3 +18.4	91.3		56 36.1 +20.2	92.8		56 32.4 +22.0	94.3		56 27.0 +23.8	95.8		56 20.2 +25.5	97.3		56 11.7 +27.2	98.8		56 01.8 +28.8	100.3		55 50.3 +30.5	101.7		24
25	56 56.7 +16.9	89.6		56 56.3 +18.8	91.1		56 54.4 +20.6	92.6		56 50.8 +22.4	94.2		56 45.7 +24.1	95.7		56 38.9 +25.9	97.2		56 30.6 +27.6	98.7		56 20.8 +29.2	100.2		25
26	57 13.6 +15.5	87.8		57 15.1 +17.3	89.4		57 15.0 +19.2	90.9		57 13.2 +21.0	92.5		57 09.8 +22.8	94.0		57 04.8 +24.6	95.6		56 58.2 +26.3	97.1		56 50.0 +28.1	98.6		26
27	57 29.1 +13.9	86.0		57 32.4 +15.8	87.6		57 34.2 +17.6	89.2		57 34.2 +19.6	90.7		57 32.6 +21.4	92.3		57 29.4 +23.2	93.9		57 24.5 +25.0	95.4		57 18.1 +26.7	97.0		27
28	57 43.0 +12.3	84.2		57 48.2 +14.3	85.8		57 51.8 +16.2	87.4		57 53.8 +18.0	89.0		57 54.0 +19.9	90.6		57 52.6 +21.8	92.1		57 49.5 +23.6	93.7		57 44.8 +25.4	95.3		28
29	57 55.3 +10.7	82.4		58 02.5 +12.6	83.9		58 08.0 +14.5	85.5		58 11.8 +16.5	87.2		58 29.8 +10.2	79.4		59 40.0 +12.2	81.1		59 48.4 +14.2	82.8		59 55.1 +16.2	84.5		29
30	58 06.0 +9.1	80.5		58 15.1 +11.0	82.1		58 22.5 +13.0	83.7		58 28.3 +14.9	85.3		58 32.3 +16.8	87.0		58 34.6 +18.8	88.6		58 35.3 +20.6	90.2		58 34.2 +22.5	91.9		30
31	58 15.1 +7.4	78.6		58 26.1 +9.4	80.2		58 35.8 +11.3	81.8		58 43.2 +13.2	83.5		58 49.1 +15.3	85.1		58 53.4 +17.2	86.8		58 55.9 +19.1	88.4		58 56.7 +21.0	90.1		31
32	58 22.5 +5.8	76.7		58 35.5 +7.7	78.3		58 46.8 +9.6	79.9		58 56.4 +11.6	81.6		59 04.4 +13.5	83.2		59 10.6 +15.5	84.9		59 15.0 +17.5	86.6		59 17.7 +19.5	88.2		32
33	58 28.3 +4.0	74.8		58 43.2 +5.9	76.4		58 56.4 +8.0	78.0		59 08.0 +9.9	79.7		59 17.9 +11.9	81.3		59 26.1 +13.9	83.0		59 32.5 +15.9	84.7		59 37.2 +17.9	86.4		33
34	58 32.3 +2.3	72.9		58 49.1 +4.3	74.5		58 17.9 +8.2	77.7		59 29.8 +10.2	79.4		59 40.0 +12.2	81.1		59 48.4 +14.2	82.8		59 55.1 +16.2	84.5		59 53.4 +16.2	84.5		34
35	58 34.6 +0.7	71.0		58 53.4 +2.5	72.6		59 10.6 +4.4	74.2		59 26.1 +6.4	75.8		59 40.0 +8.4	77.5		59 52.2 +10.4	79.1		60 02.6 +12.4	80.8		60 11.3 +14.4	82.6		35
36	58 35.3 -1.1	69.1		58 55.9 +0.8	70.6		59 15.0 +2.7	72.2		59 32.5 +4.7	73.8		59 48.4 +6.7	75.5		60 02.6 +8.7	77.2		60 15.0 +10.7	78.9		60 25.7 +12.8	80.6		36
37	58 34.2 -2.8	67.2</td																							

LATITUDE CONTRARY NAME TO DECLINATION **L.H.A. 37°, 323°**

Dec.	30°			31°			32°			33°			34°			35°			36°			Dec.	
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d
0	43 45.6 -41.8	123.6	43 12.1 -42.7	124.4	42 37.9 -43.5	125.1	42 03.1 -44.3	125.9	41 27.6 -45.0	126.6	40 51.6 -45.7	127.3	40 14.9 -46.3	128.0	39 37.8 -47.1	128.6	39 37.8 -47.1	128.6	39 37.8 -47.1	128.6	39 37.8 -47.1	128.6	0
1	43 03.8 -42.3	124.6	42 29.4 -43.1	125.3	41 54.4 -43.8	126.0	41 18.8 -44.6	126.8	40 42.6 -45.3	127.5	40 05.9 -46.1	128.1	39 28.6 -46.8	128.8	38 50.7 -47.4	129.4	38 50.7 -47.4	129.4	38 50.7 -47.4	129.4	38 50.7 -47.4	129.4	1
2	42 21.5 -42.8	125.5	41 46.3 -43.5	126.2	41 10.6 -44.3	127.0	40 34.2 -45.0	127.6	39 57.3 -45.8	128.3	39 19.8 -46.4	129.0	38 41.8 -47.0	129.6	38 03.3 -47.6	130.2	38 03.3 -47.6	130.2	38 03.3 -47.6	130.2	38 03.3 -47.6	130.2	2
3	41 38.7 -43.2	126.5	41 02.8 -44.0	127.2	40 26.3 -44.8	127.8	39 49.2 -45.4	128.5	39 11.5 -46.0	129.2	38 33.4 -46.7	129.8	37 54.8 -47.4	130.4	37 15.7 -48.0	131.0	37 15.7 -48.0	131.0	37 15.7 -48.0	131.0	37 15.7 -48.0	131.0	3
4	40 55.5 -43.6	127.4	40 18.8 -44.4	128.1	39 41.5 -45.0	128.7	39 03.8 -45.8	129.4	38 25.5 -46.5	130.0	37 46.7 -47.1	130.6	37 07.4 -47.7	131.2	36 27.7 -48.2	131.7	36 27.7 -48.2	131.7	36 27.7 -48.2	131.7	36 27.7 -48.2	131.7	4
5	40 11.9 -44.1	128.3	39 34.4 -44.7	128.9	38 56.5 -45.5	129.6	38 18.0 -46.1	130.2	37 39.0 -46.7	130.8	36 59.6 -47.3	131.4	36 19.7 -47.3	131.9	35 39.5 -48.6	132.5	35 39.5 -48.6	132.5	35 39.5 -48.6	132.5	35 39.5 -48.6	132.5	5
6	39 27.8 -44.5	129.2	38 49.7 -45.2	129.8	38 11.0 -45.8	130.4	37 31.9 -46.5	131.0	36 52.3 -47.1	131.6	36 12.3 -47.7	132.1	35 31.8 -48.2	132.7	34 50.9 -48.7	133.2	34 50.9 -48.7	133.2	34 50.9 -48.7	133.2	34 50.9 -48.7	133.2	6
7	38 43.3 -44.8	130.0	38 04.5 -45.5	130.6	37 25.2 -46.1	131.2	36 45.4 -46.7	131.8	36 05.2 -47.3	132.3	35 24.6 -47.9	132.9	34 43.6 -48.5	133.4	34 02.2 -49.0	133.9	34 02.2 -49.0	133.9	34 02.2 -49.0	133.9	34 02.2 -49.0	133.9	7
8	37 58.5 -45.2	130.9	37 19.0 -45.8	131.5	36 39.1 -46.5	132.0	35 58.7 -47.1	132.6	35 17.9 -47.6	133.1	34 36.7 -48.2	133.6	33 55.1 -48.7	134.1	33 13.2 -49.2	134.6	33 13.2 -49.2	134.6	33 13.2 -49.2	134.6	33 13.2 -49.2	134.6	8
9	37 13.3 -45.5	131.7	36 33.2 -46.2	132.3	35 52.6 -46.7	132.8	35 11.6 -47.3	133.3	34 30.3 -47.9	133.8	33 48.5 -48.4	134.3	33 06.4 -48.8	134.8	32 24.0 -49.5	135.3	32 24.0 -49.5	135.3	32 24.0 -49.5	135.3	32 24.0 -49.5	135.3	9
10	36 27.8 -45.9	132.5	35 47.0 -46.4	133.1	35 05.9 -47.1	133.6	34 24.3 -47.6	134.1	33 42.4 -48.2	134.6	33 00.1 -48.7	135.0	32 17.5 -49.2	135.5	31 34.5 -49.6	135.9	31 34.5 -49.6	135.9	31 34.5 -49.6	135.9	31 34.5 -49.6	135.9	10
11	35 41.9 -46.1	133.3	35 00.6 -46.8	133.8	34 18.8 -47.3	134.3	33 36.7 -47.8	134.8	32 54.2 -48.3	135.3	32 11.4 -48.8	135.7	31 28.3 -49.3	136.2	30 44.9 -49.8	136.6	30 44.9 -49.8	136.6	30 44.9 -49.8	136.6	30 44.9 -49.8	136.6	11
12	34 55.8 -46.5	134.1	34 13.8 -47.0	134.6	33 31.5 -47.6	135.1	32 48.9 -48.1	135.5	32 05.9 -48.6	136.0	31 22.6 -49.1	136.4	30 39.0 -49.6	136.8	29 55.1 -50.1	137.2	29 55.1 -50.1	137.2	29 55.1 -50.1	137.2	29 55.1 -50.1	137.2	12
13	34 09.3 -46.7	134.9	33 26.8 -47.3	135.4	32 43.9 -47.8	135.8	32 00.8 -48.4	136.2	31 17.3 -48.8	136.7	30 33.5 -49.3	137.1	29 49.4 -49.8	137.5	29 05.0 -50.2	137.9	29 05.0 -50.2	137.9	29 05.0 -50.2	137.9	29 05.0 -50.2	137.9	13
14	33 22.6 -47.0	135.6	32 39.5 -47.5	136.1	31 56.1 -48.0	136.5	31 12.4 -48.5	136.9	30 28.5 -49.1	137.3	29 44.2 -49.5	137.7	28 59.6 -49.9	138.1	28 14.8 -50.3	138.5	28 14.8 -50.3	138.5	28 14.8 -50.3	138.5	28 14.8 -50.3	138.5	14
15	32 35.6 -47.3	136.4	31 52.0 -47.8	136.8	31 08.1 -48.3	137.2	30 23.9 -48.8	137.6	29 39.4 -49.2	138.0	28 54.7 -49.7	138.4	28 09.7 -50.1	138.7	27 24.5 -50.5	139.1	27 24.5 -50.5	139.1	27 24.5 -50.5	139.1	27 24.5 -50.5	139.1	15
16	31 48.3 -47.5	137.1	31 04.2 -48.0	137.5	30 19.8 -48.5	137.9	29 35.1 -48.9	138.3	28 50.2 -49.4	138.7	28 05.0 -49.8	139.0	27 19.6 -50.3	139.4	26 34.0 -50.7	139.7	26 34.0 -50.7	139.7	26 34.0 -50.7	139.7	26 34.0 -50.7	139.7	16
17	31 00.8 -47.8	137.8	30 16.2 -48.3	138.2	29 31.3 -48.7	138.6	28 46.2 -49.2	139.0	28 00.8 -49.6	139.3	27 15.2 -50.0	139.7	26 29.3 -50.4	140.0	25 43.3 -50.8	140.3	25 43.3 -50.8	140.3	25 43.3 -50.8	140.3	25 43.3 -50.8	140.3	17
18	30 13.0 -47.9	138.5	29 27.9 -48.4	138.9	28 42.6 -48.9	139.3	27 57.0 -49.3	139.6	27 11.2 -49.7	140.0	26 25.2 -50.2	140.3	25 38.9 -50.5	140.6	24 52.5 -51.0	140.9	24 52.5 -51.0	140.9	24 52.5 -51.0	140.9	24 52.5 -51.0	140.9	18
19	29 25.1 -48.2	139.2	28 39.5 -48.6	139.6	27 53.7 -49.1	139.9	27 07.7 -49.5	140.3	26 21.5 -50.0	140.6	25 35.0 -50.3	140.9	24 48.4 -50.8	141.2	24 01.5 -51.1	141.5	24 01.5 -51.1	141.5	24 01.5 -51.1	141.5	24 01.5 -51.1	141.5	19
20	28 36.9 -48.4	139.9	27 50.9 -48.8	140.2	27 04.6 -49.2	140.6	26 18.2 -49.7	140.9	25 31.5 -50.0	141.2	24 44.7 -50.5	141.5	23 57.6 -50.8	141.8	23 10.4 -51.2	142.0	23 10.4 -51.2	142.0	23 10.4 -51.2	142.0	23 10.4 -51.2	142.0	20
21	27 48.5 -48.6	140.6	27 02.1 -49.0	140.9	26 15.4 -49.4	141.2	25 28.5 -49.8	141.5	24 41.5 -50.3	141.8	23 54.2 -50.6	142.1	23 06.8 -51.2	142.3	22 19.2 -51.3	142.6	22 19.2 -51.3	142.6	22 19.2 -51.3	142.6	22 19.2 -51.3	142.6	21
22	26 59.9 -48.7	141.2	26 13.1 -49.2	141.5	25 26.0 -49.6	141.8	24 38.7 -50.0	142.1	23 51.2 -50.3	142.4	23 03.6 -50.7	142.7	22 15.8 -51.0	142.9	21 27.9 -51.4	143.2	21 27.9 -51.4	143.2	21 27.9 -51.4	143.2	21 27.9 -51.4	143.2	22
23	26 11.2 -49.0	141.9	25 23.9 -49.4	142.2	24 36.4 -49.7	142.5	23 48.7 -50.1	142.7	23 00.9 -50.5	143.0	22 12.9 -50.8	143.2	21 24.8 -51.2	143.5	20 36.5 -51.6	143.7	20 36.5 -51.6	143.7	20 36.5 -51.6	143.7	20 36.5 -51.6	143.7	23
24	25 22.2 -49.0	142.5	24 34.5 -49.4	142.8	23 46.7 -49.9	143.1	22 58.6 -50.2	143.3	22 10.4 -50.6	143.6	21 22.1 -51.0	143.8	20 33.6 -51.3	144.0	19 44.9 -51.6	144.3	19 44.9 -51.6	144.3	19 44.9 -51.6	144.3	19 44.9 -51.6	144.3	24
25	24 33.2 -49.3	143.2	23 45.1 -49.7	143.4	22 56.8 -50.0	143.7	22 08.4 -50.4	143.9	21 19.8 -50.7	144.2	20 31.1 -51.1	144.4	19 42.3 -51.4	144.6	18 53.3 -51.7	144.8	18 53.3 -51.7	144.8	18 53.3 -51.7	144.8	18 53.3 -51.7	144.8	25
26	23 43.9 -49.4	143.8	22 55.4 -50.2	144.0	22 06.8 -50.2	144.3	21 18.0 -50.5	144.5	20 29.1 -50.9	144.7	19 40.0 -51.1	144.9	18 50.9 -51.5	145.1	18 05.1 -51.9	145.3	18 05.1 -51.9	145.3	18 05.1 -51.9	145.3	18 05.1 -51.9	145.3	26
27	22 54.5 -49.5	144.4	22 05.6 -49.6	144.6	21 16.6 -50.2	144.9	20 27.5 -50.6	145.1	19 38.2 -50.9	145.3	18 48.9 -51.3	145.5	17 54.9 -51.6	145.7	17 09.7 -51.8	145.9	17 09.7 -51.8	145.9	17 09.7 -51.8	145.9	17 09.7 -51.8	145.9	27
28	22 05.0 -49.7	145.0	21 15.7 -50.0	145.2	20 26.4 -50.4	145.5	19 36.9 -50.7	145.7	18 47.3 -51.0	145.9	17 57.6 -51.4	146.2	17 07.8 -51.7	146.2	16 79.7 -52.0	146.4	16 79.7 -52.0	146.4	16 79.7 -52.0	146.4	16 79.7 -52.0	146.4	28
29	21 17.1 -50.3	145.3	20 25.2 -50.8	145.5	19 31.7 -51.0	145.7	18 40.0 -51.3	145.9	17 50.8 -51.6	146.1	16 48.3 -51.9	146.3	16 05.7 -52.1	146.5	11 05.0 -52.3	146.7	11 05.0 -52.3	146.7	11 05.0 -52.3	146.7	11 05.0 -52.3	146.7	34
30	20 25.5 -49.9	146.2	19 35.6 -50.3	146.4	18 45.5 -50.6	146.6	17 55.4 -50.9	146.8	17 05.1 -51.2	147.0	16 44.8 -51.5	147.1	15 24.4 -51.7	147.3	14 33.8 -52.1	147.4	14 33.8 -52.1	147.4	14 33.8 -52.1	147.4	14 33.8 -52.1	147.4	30
31	19 35.6 -50.1	146.8	18 45.3 -50.4																				

38°, 322° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	43 02.1 +40.7	122.6	42 29.4 +41.6	123.4	41 56.0 +42.5	124.1	41 22.0 +43.3	124.9	40 47.4 +44.1	125.6	40 12.2 +44.9	126.3	39 36.4 +45.6	127.0	39 00.1 +46.2	127.6	0	0	0	0	0	0	0	0	0
1	43 42.8 +40.3	121.6	43 11.0 +41.2	122.4	42 38.5 +42.0	123.2	42 05.3 +42.9	124.0	41 31.5 +43.7	124.7	40 57.1 +44.4	125.4	40 22.0 +45.2	126.1	39 46.3 +46.0	126.8	1	0	0	0	0	0	0	0	0
2	44 23.1 +39.6	120.6	43 52.2 +40.6	121.4	43 20.5 +41.6	122.2	42 48.2 +42.4	123.0	42 15.2 +43.2	123.8	41 41.5 +44.0	124.5	41 07.2 +44.8	125.2	40 32.3 +45.5	125.9	2	0	0	0	0	0	0	0	0
3	45 02.7 +39.1	119.5	44 32.8 +40.0	120.4	44 02.1 +40.9	121.2	43 30.6 +41.9	122.0	42 58.4 +42.8	122.8	42 25.5 +43.6	123.6	41 52.0 +44.4	124.4	41 17.8 +45.2	125.1	3	0	0	0	0	0	0	0	0
4	45 41.8 +38.4	118.4	45 12.8 +39.5	119.3	44 43.0 +40.4	120.2	44 12.5 +41.3	121.0	43 41.2 +42.2	121.9	43 09.1 +43.1	122.7	42 36.4 +44.0	123.4	42 03.0 +44.8	124.2	4	0	0	0	0	0	0	0	0
5	46 20.2 +37.0	117.3	45 52.3 +38.8	118.3	45 23.4 +39.9	119.2	44 53.8 +40.8	120.0	44 23.4 +41.7	120.9	43 52.2 +42.7	121.7	43 20.4 +43.4	122.5	42 47.8 +44.3	123.3	5	0	0	0	0	0	0	0	0
6	46 58.0 +37.1	116.2	46 31.1 +38.2	117.2	46 03.3 +39.2	118.1	45 34.6 +40.2	119.0	45 05.1 +41.2	119.9	44 34.9 +42.1	120.7	44 03.8 +43.0	121.6	43 32.1 +43.8	122.4	6	0	0	0	0	0	0	0	0
7	47 35.1 +36.4	115.0	47 09.3 +37.5	116.0	46 42.5 +38.6	117.0	46 14.8 +39.6	117.9	45 46.3 +40.6	118.8	45 17.0 +41.5	119.7	44 46.8 +42.5	120.6	44 15.9 +43.4	121.4	7	0	0	0	0	0	0	0	0
8	48 11.5 +35.7	113.9	47 46.8 +36.7	114.9	47 21.1 +37.9	115.9	46 54.4 +39.0	116.8	46 26.9 +40.0	117.8	45 58.5 +41.0	118.7	45 29.3 +42.0	119.6	44 59.3 +42.9	120.5	8	0	0	0	0	0	0	0	0
9	48 47.2 +34.8	112.6	48 23.5 +36.1	113.7	47 59.0 +37.1	114.7	47 33.4 +38.3	115.7	47 06.9 +39.4	116.7	46 39.5 +40.4	117.6	46 11.3 +41.4	118.6	45 42.2 +42.3	119.5	9	0	0	0	0	0	0	0	0
10	49 22.0 +34.0	111.4	48 59.6 +35.2	112.5	48 36.1 +36.5	113.5	48 11.7 +37.6	114.6	47 46.3 +38.7	115.6	47 19.9 +39.8	116.5	46 52.7 +40.8	117.5	46 24.5 +41.8	118.4	10	0	0	0	0	0	0	0	0
11	49 56.0 +33.2	110.1	49 34.8 +34.5	111.2	49 12.6 +35.7	112.3	48 49.3 +36.8	113.4	48 25.0 +38.0	114.4	47 59.7 +39.1	115.4	47 33.5 +40.1	116.4	47 06.3 +41.2	117.4	11	0	0	0	0	0	0	0	0
12	50 29.2 +32.3	108.8	50 09.3 +33.6	110.0	49 48.3 +34.8	111.1	49 26.1 +36.1	112.2	49 03.0 +37.2	113.2	48 38.8 +38.4	114.3	48 13.6 +39.5	115.3	47 47.5 +40.6	116.3	12	0	0	0	0	0	0	0	0
13	51 01.5 +31.4	107.5	50 42.9 +32.7	108.7	50 23.1 +34.0	109.8	50 02.2 +35.3	110.9	49 40.2 +36.5	112.0	49 17.2 +37.7	113.1	48 53.1 +38.9	114.2	48 28.1 +39.9	115.2	13	0	0	0	0	0	0	0	0
14	51 32.9 +30.4	106.1	51 15.6 +31.8	107.3	50 57.1 +33.2	108.5	50 37.5 +34.4	109.7	50 16.7 +35.7	110.8	49 54.9 +36.8	111.9	49 32.0 +38.1	113.0	49 08.0 +39.2	114.1	14	0	0	0	0	0	0	0	0
15	52 03.3 +29.3	104.7	51 47.4 +30.8	106.0	51 30.3 +32.1	107.2	51 11.9 +33.6	108.4	50 52.4 +34.9	109.5	50 31.8 +36.1	110.7	50 10.1 +37.3	111.8	49 47.2 +38.5	112.9	15	0	0	0	0	0	0	0	0
16	52 32.6 +28.4	103.3	52 18.2 +29.8	104.6	52 02.4 +31.3	105.8	51 45.5 +32.6	107.0	51 27.3 +34.0	108.2	51 07.9 +35.3	109.4	50 47.4 +36.5	110.6	50 25.7 +37.8	111.7	16	0	0	0	0	0	0	0	0
17	53 01.0 +27.2	101.9	52 48.0 +28.7	103.1	52 33.7 +30.2	104.4	52 18.1 +31.7	105.7	52 01.3 +33.0	106.9	51 43.2 +34.4	108.1	51 23.9 +35.7	109.3	51 03.5 +37.0	110.5	17	0	0	0	0	0	0	0	0
18	53 28.2 +26.1	100.4	53 16.7 +27.7	101.7	53 03.9 +29.2	103.0	52 49.8 +30.6	104.3	52 34.3 +32.1	105.5	52 17.6 +33.5	106.8	51 59.6 +34.9	108.0	51 40.5 +36.1	109.2	18	0	0	0	0	0	0	0	0
19	53 54.3 +24.9	98.8	53 44.4 +26.5	100.2	53 33.1 +28.0	101.5	53 20.4 +29.6	102.8	53 06.4 +31.1	104.1	52 51.3 +32.5	105.4	52 34.5 +33.9	106.7	52 16.6 +35.3	107.9	19	0	0	0	0	0	0	0	0
20	54 19.2 +23.7	97.3	54 10.9 +25.3	98.7	54 01.1 +27.0	100.0	53 50.0 +28.5	101.4	53 37.5 +30.0	102.7	53 23.6 +31.5	104.0	53 08.4 +32.9	105.3	52 51.9 +34.3	106.6	20	0	0	0	0	0	0	0	0
21	54 42.9 +22.5	95.7	54 36.2 +24.1	97.1	54 28.1 +25.7	98.5	54 18.5 +27.3	99.9	54 07.5 +28.9	101.2	53 41.3 +32.0	102.6	53 41.3 +32.0	103.9	52 26.2 +33.4	105.2	21	0	0	0	0	0	0	0	0
22	55 05.4 +21.1	94.1	55 00.3 +22.9	95.5	54 53.8 +24.6	96.9	54 45.8 +26.2	98.3	54 36.4 +27.8	99.7	54 25.6 +29.3	101.1	54 13.3 +30.9	102.5	53 59.6 +32.4	103.8	22	0	0	0	0	0	0	0	0
23	55 26.5 +19.8	92.5	55 23.2 +21.5	93.9	55 18.4 +23.2	95.3	55 12.0 +25.0	96.8	55 04.2 +26.6	98.2	54 54.9 +28.2	99.6	54 44.2 +29.7	101.0	54 32.0 +31.3	102.4	23	0	0	0	0	0	0	0	0
24	55 46.3 +18.4	90.8	55 44.7 +20.2	92.3	55 41.6 +21.9	93.7	55 37.0 +23.6	95.2	55 30.8 +25.3	96.6	55 23.1 +27.0	98.1	55 13.9 +28.7	99.5	55 03.3 +30.2	100.9	24	0	0	0	0	0	0	0	0
25	56 04.7 +17.0	89.1	56 04.9 +18.8	90.6	56 03.5 +20.6	92.1	56 00.6 +22.3	93.5	55 56.1 +24.1	95.0	55 50.1 +25.8	96.5	55 42.6 +27.4	97.9	55 33.5 +29.1	99.4	25	0	0	0	0	0	0	0	0
26	56 21.7 +15.6	87.4	56 23.7 +17.4	88.9	56 24.1 +19.2	90.4	56 22.9 +21.0	91.9	56 20.2 +22.7	93.4	56 15.9 +24.4	94.9	56 10.0 +26.2	96.4	56 02.6 +27.9	97.8	26	0	0	0	0	0	0	0	0
27	56 37.3 +14.0	85.6	56 41.1 +15.9	87.1	56 43.3 +17.7	88.6	56 43.9 +19.5	90.2	56 42.9 +21.4	91.7	56 40.3 +23.2	93.2	56 36.2 +24.9	94.7	56 30.5 +26.6	96.2	27	0	0	0	0	0	0	0	0
28	56 51.3 +12.5	83.8	56 57.0 +14.3	85.4	57 01.0 +16.3	86.9	57 03.4 +18.1	88.4	57 04.3 +19.9	90.0	57 03.5 +21.7	91.5	57 01.1 +23.5	93.1	56 57.1 +25.2	94.6	28	0	0	0	0	0	0	0	0
29	57 03.8 +11.0	82.0	57 11.3 +12.9	83.6	57 17.3 +14.7	85.1	57 21.5 +16.6	86.7	57 24.2 +18.4	88.2	57 25.2 +20.3	89.8	57 24.6 +22.1	91.4	57 22.3 +24.0	92.9	29	0	0	0	0	0	0	0	0
30	57 14.8 +9.4	80.2	57 24.2 +11.3	81.8	57 32.0 +13.1	83.3	57 38.1 +15.1	84.9	57 42.6 +17.0	86.5	57 45.5 +18.8	88.1	57 46.7 +20.7	89.6	57 46.3 +22.5	91.2	30	0	0	0	0	0	0	0	0
31	57 24.2 +7.8	78.4	57 35.5 +9.6	79.9	57 45.1 +11.6	81.5	57 53.2 +13.5	83.1	57 59.6 +15.4	84.7	58 04.3 +17.3	86.3	58 07.4 +19.2	87.9	58 08.8 +21.1	89.5	31	0	0	0	0	0	0	0	0
32	57 32.0 +6.1	76.6	57 45.1 +8.1	78.1	57 56.7 +10.0	79.7	58 06.7 +11.8	81.2	58 15.0 +13.8	82.8	58 21.6 +15.7	84.4	58 26.6 +17.6	86.1	58 29.9 +19.5	87.7	32	0	0	0	0	0	0	0	0
33	57 38.1 +4.5	74.7	57 53.2 +6.4	76.2	58 06.7 +8.3	77.8	58 18.5 +10.3	79.4	58 28.8 +12.1	81.0	58 37.3 +14.2	82.6	58 44.2 +16.1	84.2	58 49.4 +18.0	85.9	33	0	0	0	0	0	0	0	0
34	57 42.6 +2.9	72.8	57 59.6 +4.7	74.4	58 15.0 +6.6	75.9	58 28.8 -11.8	76.5	58 01.3 -8.7	77.8	58 32.6 -9.2	79.2	58 02.7 -5.1	80.7	58 31.4 -3.3	82.2	34	0	0						

LATITUDE CONTRARY NAME TO DECLINATION **L.H.A. 38°, 322°**

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z																						
0	43 02.1	-41.3	122.6	42 29.4	-42.2	123.4	41 56.0	-42.9	124.1	41 22.0	-43.7	124.9	40 47.4	-44.5	125.6	40 12.2	-45.3	126.3	39 36.4	-46.0	127.0	39 00.1	-46.7	127.6	0
1	42 20.8	-41.8	123.6	41 47.2	-42.6	124.4	41 13.1	-43.5	125.1	40 38.3	-44.2	125.8	40 02.9	-44.9	126.5	39 26.9	-45.6	127.3	38 50.4	-46.2	127.8	38 13.4	-46.9	128.4	1
2	41 39.0	-42.3	124.6	41 04.6	-43.1	125.3	40 29.6	-43.8	126.0	39 54.1	-44.6	126.7	39 18.0	-45.3	127.3	38 41.3	-45.9	128.0	38 04.2	-46.7	128.6	37 26.5	-47.3	129.2	2
3	40 56.7	-42.7	125.5	40 21.5	-43.4	126.2	39 45.8	-44.2	126.9	39 09.5	-44.9	127.5	38 32.7	-45.6	128.2	37 55.4	-46.3	128.8	37 17.5	-46.7	129.4	36 39.2	-47.5	130.0	3
4	40 14.0	-43.2	126.4	39 38.1	-43.9	127.1	39 01.6	-44.6	127.8	38 24.6	-45.3	128.4	37 47.1	-46.0	129.0	37 09.1	-46.7	129.6	36 30.6	-47.3	130.2	35 51.7	-47.9	130.7	4
5	39 30.8	-43.5	127.3	38 54.2	-44.3	128.0	38 17.0	-45.0	128.6	37 39.3	-45.7	129.2	37 01.1	-46.3	129.8	36 22.4	-46.9	130.4	35 43.3	-47.5	130.9	35 03.8	-48.1	131.5	5
6	38 47.3	-44.0	128.2	38 09.9	-44.7	128.9	37 32.0	-45.4	129.5	36 53.6	-46.0	130.0	36 14.8	-46.6	130.6	35 35.5	-47.2	131.2	34 55.8	-47.8	131.7	34 15.7	-48.3	132.2	6
7	38 03.3	-44.3	129.1	37 25.2	-45.0	129.7	36 46.6	-45.6	130.3	36 07.6	-46.3	130.8	35 28.2	-46.9	131.4	34 48.3	-47.5	131.9	34 08.0	-48.0	132.4	33 27.4	-48.6	132.9	7
8	37 19.0	-44.7	130.0	36 40.2	-45.4	130.5	36 01.0	-46.0	131.1	35 21.3	-46.5	131.6	34 41.3	-47.2	131.2	34 00.8	-47.7	132.6	33 20.0	-48.3	133.1	32 38.8	-48.8	133.6	8
9	36 34.3	-45.1	130.8	35 54.8	-45.6	131.3	35 15.0	-46.3	131.9	34 34.8	-46.9	132.4	33 54.1	-47.4	132.9	33 13.1	-48.5	133.8	31 50.0	-49.1	134.3	9			
10	35 49.2	-45.3	131.6	35 09.2	-46.0	132.1	34 28.7	-46.6	132.6	33 47.9	-47.2	133.1	33 06.7	-47.7	133.6	32 25.1	-48.2	134.1	31 43.2	-48.8	134.5	31 00.9	-49.2	135.0	10
11	35 03.9	-45.7	132.4	34 23.2	-46.3	132.9	33 42.1	-46.8	133.4	33 00.7	-47.4	133.9	32 19.0	-48.0	134.3	31 36.9	-48.5	134.8	30 54.4	-48.9	135.2	30 11.7	-49.5	135.6	11
12	34 18.2	-46.0	133.2	33 36.9	-46.5	133.7	32 55.3	-47.1	134.2	32 13.3	-47.6	134.6	31 31.0	-48.1	135.1	30 48.4	-48.7	135.5	30 05.5	-49.2	135.9	29 22.2	-49.6	136.3	12
13	33 32.2	-46.3	134.0	32 50.4	-46.9	134.4	32 08.2	-47.4	134.9	31 25.7	-47.9	135.3	30 42.9	-48.4	135.8	29 59.7	-48.9	136.2	29 16.3	-49.3	136.6	28 32.6	-49.8	136.9	13
14	32 45.9	-46.5	134.7	32 03.5	-47.0	135.2	31 20.8	-47.6	135.6	30 37.8	-48.1	136.0	29 54.5	-48.6	136.4	29 10.8	-49.0	136.8	28 27.0	-49.6	137.2	27 42.8	-50.0	137.6	14
15	31 59.4	-46.8	135.5	31 16.5	-47.3	135.9	30 33.2	-47.8	136.3	29 49.7	-48.3	136.7	29 05.9	-48.8	137.1	28 21.8	-49.3	137.5	27 37.4	-49.7	137.8	26 52.8	-50.1	138.2	15
16	31 12.6	-47.0	136.2	30 29.2	-47.6	136.6	29 45.4	-48.0	137.0	29 01.4	-48.6	137.4	28 17.1	-49.0	137.8	27 32.5	-49.4	138.1	26 47.7	-49.8	138.5	26 02.7	-50.3	138.8	16
17	30 25.6	-47.3	136.9	29 41.6	-47.8	137.3	28 57.4	-48.3	137.7	28 12.8	-48.7	138.1	27 28.1	-49.2	138.4	26 43.1	-49.6	138.8	25 57.8	-50.0	139.1	25 12.4	-50.5	139.4	17
18	29 38.3	-47.5	137.6	28 53.8	-47.9	138.0	28 09.1	-48.4	138.4	27 24.1	-48.9	138.7	26 38.9	-49.3	139.1	25 53.5	-49.8	139.4	25 07.8	-50.2	139.7	24 21.9	-50.5	140.0	18
19	28 50.8	-47.7	138.3	28 05.9	-48.2	138.7	27 20.7	-48.7	139.1	26 35.2	-49.0	139.4	25 49.6	-49.5	139.7	25 03.7	-49.9	140.0	24 17.6	-50.4	140.3	23 31.4	-50.7	140.6	19
20	28 03.1	-47.9	139.0	27 17.7	-48.4	139.4	26 32.0	-48.8	139.7	25 46.2	-49.3	140.0	25 00.1	-49.7	140.3	24 13.8	-50.1	140.6	23 27.3	-50.4	140.9	22 40.7	-50.9	141.2	20
21	27 15.2	-48.1	139.7	26 29.3	-48.5	140.0	25 43.2	-49.0	140.4	24 56.9	-49.4	140.7	24 10.4	-49.8	140.9	23 23.7	-50.2	141.2	22 36.9	-50.4	141.5	21 49.8	-50.9	141.7	21
22	26 27.1	-48.3	140.4	25 40.8	-48.8	140.7	24 54.2	-49.1	141.0	24 07.5	-49.5	141.3	23 20.6	-49.9	141.6	22 33.5	-50.3	141.8	21 46.3	-50.7	142.1	20 58.9	-51.1	142.3	22
23	25 38.8	-48.5	141.0	24 52.0	-48.8	141.3	24 05.1	-49.3	141.6	23 18.0	-49.7	141.9	22 30.7	-50.1	142.2	21 43.2	-50.4	142.4	20 55.6	-50.8	142.6	20 07.8	-51.1	142.9	23
24	24 50.3	-48.6	141.7	24 03.2	-49.1	142.0	23 15.8	-49.4	142.3	22 28.3	-49.8	142.5	21 40.6	-50.2	142.8	20 52.8	-50.6	143.0	19 40.4	-50.9	143.2	19 16.7	-51.3	143.4	24
25	24 01.7	-48.8	142.3	23 14.1	-49.2	142.6	22 26.4	-49.6	142.9	21 38.5	-50.0	143.1	20 50.4	-50.3	143.3	20 02.2	-50.7	143.6	19 13.9	-51.1	143.8	18 25.4	-51.4	144.0	25
26	23 12.9	-48.9	143.0	22 24.9	-49.3	143.2	21 36.8	-49.7	143.5	20 48.5	-50.1	143.7	20 00.1	-50.5	143.9	19 11.5	-50.8	144.1	18 22.8	-51.1	144.3	17 34.0	-51.4	144.5	26
27	22 24.0	-49.1	143.6	21 35.6	-49.5	143.8	20 47.1	-49.9	144.1	19 58.4	-50.2	144.3	19 09.6	-50.5	144.5	18 20.7	-50.8	144.7	17 31.7	-51.2	144.9	16 42.6	-51.6	145.1	27
28	21 34.9	-49.2	144.2	20 46.1	-49.6	144.5	19 57.2	-49.9	144.7	19 08.2	-50.3	144.9	18 19.1	-50.6	145.1	17 29.9	-51.0	145.3	16 40.5	-51.3	145.4	15 51.0	-51.6	145.6	28
29	20 45.7	-49.4	144.8	19 56.5	-49.7	145.1	19 07.3	-50.1	145.3	18 17.9	-50.4	145.4	17 28.5	-50.8	145.6	16 38.9	-51.1	145.8	15 49.2	-51.4	146.0	14 59.4	-51.6	146.1	29
30	19 56.3	-49.5	145.4	19 06.8	-49.8	145.6	18 17.2	-50.1	145.8	17 27.5	-50.5	146.0	16 37.7	-50.8	146.2	15 47.8	-51.1	146.4	14 57.8	-51.4	146.5	14 07.8	-51.8	146.6	30
31	19 06.8	-49.6	146.0	18 17.0	-49.9	146.2	17 27.1	-50.3	146.4	16 37.0	-50.4	146.6	15 46.9	-50.9	146.7	14 56.7	-51.2	146.8	14 06.4	-51.5	147.0	13 16.0	-51.8	147.2	31
32	18 17.2	-49.7	146.6	17 27.1	-50.1	146.8	16 36.8	-50.4	147.0	15 46.4	-50.6	147.1	14 56.0	-51.0	147.3	14 05.5	-51.3	147.4	13 14.9	-51.6	147.6	12 24.2	-51.9	147.7	32
33	17 27.5	-49.8	147.2	16 37.0	-50.1	147.4	15 46.4	-50.4	147.6	14 55.8	-50.8	147.7	14 05.0	-51.0	147.8	13 14.2	-51.4	148.0	12 23.3	-51.7	148.1	11 32.3	-51.9	148.2	33
34	16 37.7	-49.9	147.8	15 35.0	-50.3	148.0	14 36.9	-50.1	148.1	13 24.7	-50.5	148.2	13 14.0	-51.2	148.4	12 22.8	-51.4	148.6	11 40.4	-52.0	148.7	10 40.4	-52.2	148.8	34
35	15 47.8	-50.0	148.4	14 56.7	-50.3	148.5	14 05.5	-50.6	148.7	13 14.2	-50.9	148.8	12 22.8	-51.2	148.9	11 31.4	-51.4	149.0	10 40.0	-51.8	149.1	9 48.4	-52.0	149.2	35
36	14 57.8	-50.0	149.0	14 06.4	-50.4	149.1	13 14.9	-50.7	149.2	12 23.3	-51.0	149.3	10 40.0	-51.6	149.5	9 48.2	-51.8	149.6	8 56.4	-52.0	149.7	36			
37</td																									

39°, 321° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Dec.																					
0	42 18.1 +40.3	121.7		41 46.2 +41.2	122.5		41 13.7 +42.0	123.2		40 40.5 +42.9	123.9		40 06.7 +43.7	124.6		39 32.3 +44.5	125.3		38 57.4 +45.1	126.0		38 21.8 +45.9	126.6		0
1	42 58.4 +39.7	120.7		42 27.4 +40.7	121.5		41 55.7 +41.6	122.2		41 23.4 +42.4	123.0		40 50.4 +43.2	123.7		40 16.8 +44.0	124.4		39 42.5 +44.8	125.1		39 07.7 +45.5	125.8		1
2	43 38.1 +39.2	119.7		43 08.1 +40.1	120.5		42 37.3 +41.0	121.3		42 05.8 +41.9	122.0		41 33.6 +42.8	122.8		41 00.8 +43.6	123.5		40 27.3 +44.4	124.3		39 53.2 +45.2	124.9		2
3	44 17.3 +38.6	118.6		43 48.2 +39.6	119.5		43 18.3 +40.5	120.3		42 47.7 +41.4	121.1		42 16.4 +42.3	121.9		41 44.4 +43.1	122.6		41 11.7 +44.0	123.4		40 38.4 +44.7	124.1		3
4	44 55.9 +38.0	117.5		44 27.8 +39.0	118.4		43 58.8 +40.0	119.3		43 29.1 +40.9	120.1		42 58.7 +41.8	120.9		42 27.5 +42.7	121.7		41 55.7 +43.5	122.5		41 23.1 +44.4	123.2		4
5	45 33.9 +37.3	116.4		45 06.8 +38.3	117.3		44 38.8 +39.4	118.2		44 10.0 +40.4	119.1		43 40.5 +41.3	119.9		43 10.2 +42.2	120.7		42 39.2 +43.1	121.5		42 07.5 +43.9	122.3		5
6	46 11.2 +36.7	115.3		45 45.1 +37.8	116.2		45 18.2 +38.8	117.1		44 50.4 +39.8	118.0		44 21.8 +40.7	118.9		43 52.4 +41.7	119.7		43 22.3 +42.5	120.6		42 51.4 +43.4	121.4		6
7	46 47.9 +35.9	114.2		46 22.9 +37.0	115.1		45 57.0 +38.1	116.1		45 30.2 +39.1	117.0		45 02.5 +40.2	117.9		44 34.1 +41.1	118.7		44 04.8 +42.1	119.6		43 34.8 +43.0	120.4		7
8	47 23.8 +35.2	113.0		46 59.9 +36.4	114.0		46 35.1 +37.5	114.9		46 09.3 +38.6	115.9		45 42.7 +39.6	116.8		45 15.2 +40.6	117.7		44 46.9 +41.5	118.6		44 17.8 +42.5	119.5		8
9	47 59.0 +34.5	111.8		47 36.3 +35.6	112.8		47 12.6 +36.7	113.8		46 47.9 +37.9	114.8		46 22.3 +38.9	115.7		45 55.8 +40.4	116.7		45 28.4 +41.0	117.6		45 00.3 +41.9	118.5		9
10	48 33.5 +33.6	110.5		48 11.9 +34.9	111.6		47 49.3 +36.1	112.6		47 25.8 +37.1	113.6		47 01.2 +38.3	114.6		46 35.8 +39.3	115.6		46 09.4 +40.4	116.5		45 42.2 +41.4	117.4		10
11	49 07.1 +32.8	109.3		48 46.8 +34.0	110.4		48 25.4 +35.2	111.4		48 02.9 +36.5	112.5		47 39.5 +37.6	113.6		47 15.1 +38.7	114.5		46 49.8 +39.8	115.5		46 23.6 +40.8	116.4		11
12	49 39.9 +31.9	108.0		49 20.8 +33.2	109.1		49 00.6 +34.5	110.2		48 39.4 +35.7	111.3		48 17.1 +36.9	112.3		47 53.8 +38.0	113.3		47 29.6 +39.1	114.4		47 04.4 +40.1	115.3		12
13	50 11.8 +31.1	106.7		49 54.0 +32.4	107.8		49 35.1 +33.7	108.9		49 15.1 +34.9	110.0		48 50.4 +36.1	111.1		48 31.8 +37.3	112.2		48 08.7 +38.4	113.2		47 44.5 +39.6	114.2		13
14	50 42.9 +30.4	105.3		50 26.4 +31.4	106.5		50 08.8 +32.7	107.7		49 50.0 +34.1	108.8		49 30.1 +35.3	109.9		49 09.1 +36.6	111.0		48 47.1 +37.7	112.1		48 24.1 +38.8	113.1		14
15	51 12.9 +29.1	104.0		50 57.8 +30.5	105.2		50 41.5 +31.9	106.3		50 24.1 +33.2	107.5		50 05.4 +34.5	108.7		49 45.7 +35.7	109.8		49 24.8 +37.0	110.9		49 02.9 +38.2	112.0		15
16	51 42.0 +28.0	102.6		51 28.3 +29.5	103.8		51 13.4 +30.9	105.0		50 57.3 +32.3	106.2		50 39.9 +33.7	107.4		50 21.4 +35.0	108.5		50 01.8 +36.2	109.7		49 41.1 +37.4	110.8		16
17	52 10.0 +27.0	101.1		51 57.8 +28.5	102.4		51 44.3 +29.9	103.6		51 29.6 +31.3	104.8		51 13.6 +32.7	106.1		50 56.4 +34.0	107.2		50 38.0 +35.4	108.4		50 18.5 +36.6	109.6		17
18	52 37.0 +25.9	99.7		52 26.3 +27.4	100.9		52 14.2 +28.9	102.2		52 00.9 +30.4	103.5		51 46.3 +31.8	104.7		51 30.4 +33.2	105.9		51 13.4 +34.5	107.1		50 55.1 +35.8	108.3		18
19	53 0.29 +24.7	98.2		52 53.7 +26.3	99.5		52 43.1 +27.9	100.8		52 31.3 +29.3	102.1		52 18.1 +30.8	103.3		52 03.6 +32.2	104.6		51 47.9 +33.6	105.8		51 30.9 +35.0	107.0		19
20	53 27.6 +23.6	96.6		53 20.0 +25.2	98.0		53 11.0 +26.7	99.3		53 00.6 +28.3	100.6		52 48.9 +29.7	101.9		52 35.8 +31.3	103.2		52 21.5 +32.6	104.5		52 05.9 +34.0	105.7		20
21	53 51.2 +22.3	95.1		53 45.2 +23.9	96.5		53 37.7 +25.6	97.8		53 28.9 +27.1	99.1		53 18.6 +28.7	100.5		53 07.1 +30.2	101.8		52 54.1 +31.7	103.1		52 39.9 +33.1	104.4		21
22	54 13.5 +21.1	93.5		54 09.1 +22.8	94.9		54 03.3 +24.4	96.3		53 56.0 +26.0	97.6		53 47.3 +27.6	99.0		53 37.3 +29.1	100.3		53 25.8 +30.7	101.7		53 13.0 +32.1	103.0		22
23	54 34.6 +19.8	91.9		54 31.9 +21.4	93.3		54 27.7 +23.1	94.7		54 22.0 +24.8	96.1		54 14.9 +26.4	97.5		54 06.4 +28.0	98.9		53 56.5 +29.5	100.2		53 45.1 +31.1	101.6		23
24	54 54.4 +18.4	90.3		54 53.3 +20.2	91.7		54 50.8 +21.9	93.1		54 46.8 +23.6	94.5		54 41.3 +25.3	95.9		54 34.4 +26.8	97.3		54 26.0 +28.5	98.7		54 16.2 +30.0	100.1		24
25	55 12.8 +17.0	88.6		55 13.5 +18.8	90.1		55 12.7 +20.5	91.5		55 10.4 +22.2	92.9		55 06.6 +23.9	94.4		55 01.2 +25.7	95.8		54 54.5 +27.2	97.2		54 46.2 +28.9	98.6		25
26	55 29.8 +15.7	86.9		55 32.3 +17.4	88.4		55 33.2 +19.2	89.8		55 32.6 +21.0	91.3		55 30.5 +22.7	92.7		55 26.9 +24.4	94.2		55 21.7 +26.1	95.6		55 15.1 +27.7	97.1		26
27	55 44.5 +14.2	85.2		55 49.7 +16.0	86.7		55 52.4 +17.8	88.2		55 53.6 +19.6	89.6		55 53.2 +21.3	91.1		55 51.3 +23.0	92.6		55 47.8 +24.8	94.1		55 42.8 +26.5	95.5		27
28	55 59.7 +12.7	83.5		56 05.7 +14.6	85.0		56 10.2 +16.4	86.4		56 13.2 +18.1	87.9		56 14.5 +20.0	89.4		56 14.3 +21.8	90.9		56 12.6 +23.5	92.4		56 09.3 +25.2	93.9		28
29	56 12.4 +11.2	81.7		56 20.3 +13.0	83.2		56 26.6 +14.9	84.7		56 31.3 +16.7	86.2		56 34.5 +18.5	87.7		56 36.1 +20.3	89.2		56 36.1 +22.1	90.8		56 34.5 +23.9	92.3		29
30	56 23.6 +9.7	80.0		56 33.3 +11.5	81.4		56 41.5 +13.3	83.0		56 48.0 +15.3	84.5		56 53.0 +17.1	86.0		56 56.4 +18.9	87.5		56 58.2 +20.7	89.1		56 58.4 +22.5	90.6		30
31	56 33.3 +8.2	78.2		56 44.8 +10.0	79.7		56 54.8 +11.9	81.2		57 03.3 +13.7	82.7		57 10.1 +15.5	84.2		57 15.3 +17.4	85.8		57 18.9 +19.3	87.3		57 20.9 +21.1	88.9		31
32	56 41.5 +6.5	76.4		56 54.8 +8.5	77.9		57 06.7 +10.3	79.4		57 17.0 +12.1	80.9		57 25.6 +14.1	82.4		57 32.7 +15.9	84.0		57 38.2 +17.8	85.6		57 42.0 +19.6	87.1		32
33	56 48.0 +5.0	74.6		57 03.3 +6.8	76.0		57 17.0 +8.6	77.6		57 29.1 +10.6	79.1		57 39.7 +12.4	80.6		57 48.6 +14.4	82.2		57 56.0 +16.2	83.8		58 01.6 +18.1	85.4		33
34	56 53.0 +3.4	72.7		57 10.1 +5.2	74.2		57 25.6 +7.1	75.7		57 39.7 +8.9	77.2		57 52.1 +10.9	78.8		58 03.0 +12.7	80.4		58 12.2 +14.6	82.0		58 19.7 +16.6	83.6		34
35	56 54.4 +1.8	70.9		57 15.3 +3.6	72.4		57 32.7 +5.5	73.9		57 48.6 +7.4	75.4		58 03.0 +9.2	76.9		58 15.7 +11.1	78.5		58 26.8 +13.1	80.1		58 36.3 +15.0	81.7		35
36	56 58.2 +0.2	69.1		57 18.9 +2.0	70.5		57 38.2 +3.8	72.0		57 56.0 +5.6	73.5		58 12.2 +7.5	75.1		58 26.8 +9.5	76.6		58 39.9 +11.4	78.2		58 51.3 +13.3	79.9		36
37	56 58.4 -1.5	67.2																							

LATITUDE CONTRARY NAME TO DECLINATION **L.H.A. 39°, 321°**

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	42	18.1	-40.8	121.7	41	46.2	-41.7	122.5	41	13.7	-42.5	123.2	40	40.5	-43.3	123.9	40	06.7	-44.1	124.6	39	32.3	-44.8	125.3	38	57.4	-45.6	126.0	38	21.8	-46.2	126.6	0
1	41	37.3	-41.4	122.7	41	04.5	-42.1	123.4	40	31.2	-43.0	124.1	39	57.2	-43.7	124.8	39	22.6	-44.4	125.5	38	47.5	-45.2	126.2	38	11.8	-45.8	126.8	37	35.6	-46.5	127.4	1
2	40	55.9	-41.7	123.6	40	22.4	-42.6	124.4	39	48.2	-43.3	125.0	39	13.5	-44.1	125.7	38	38.2	-44.9	126.4	38	02.3	-45.5	127.0	37	26.0	-46.2	127.6	36	49.1	-46.9	128.2	2
3	40	14.2	-42.3	124.6	39	39.8	-43.6	125.3	39	04.9	-43.8	125.9	38	29.4	-44.5	126.6	37	53.3	-45.2	127.2	37	16.8	-45.9	127.8	36	39.8	-46.6	128.4	36	02.2	-47.1	129.0	3
4	39	31.9	-42.6	125.5	38	56.8	-43.4	126.2	38	21.1	-44.2	126.8	37	44.9	-44.9	127.4	37	08.1	-45.5	128.0	36	30.9	-46.2	128.6	35	53.2	-46.8	129.2	35	15.1	-47.4	129.8	4
5	38	49.3	-43.1	126.4	38	13.4	-43.6	127.1	37	36.9	-44.5	127.7	37	00.0	-45.2	128.3	36	22.6	-45.8	128.9	35	44.7	-46.5	129.4	35	06.4	-47.1	130.0	34	27.7	-47.7	130.5	5
6	38	06.2	-43.5	127.3	37	29.6	-44.2	127.9	36	52.4	-44.8	128.5	36	14.8	-45.5	129.1	35	36.8	-46.2	129.7	34	58.2	-46.7	130.2	34	19.3	-47.4	130.7	33	40.0	-48.0	131.2	6
7	37	22.7	-43.8	128.2	36	45.4	-44.6	128.8	36	07.6	-45.2	129.3	35	29.3	-45.8	129.9	34	50.6	-46.5	130.4	34	11.5	-47.1	131.0	33	31.9	-47.6	131.5	32	52.0	-48.2	132.0	7
8	36	38.9	-44.3	129.0	36	00.8	-44.8	129.6	35	22.4	-45.6	130.2	34	43.5	-46.2	130.7	34	04.1	-46.7	131.2	33	24.4	-47.3	131.7	32	44.3	-47.9	132.2	32	03.8	-48.4	132.7	8
9	35	54.6	-44.9	129.9	35	16.0	-45.2	130.4	34	36.8	-45.8	131.0	33	57.3	-46.4	131.5	33	17.4	-47.0	132.0	32	37.1	-47.6	132.4	31	56.4	-48.1	132.9	31	15.4	-48.7	133.4	9
10	35	10.1	-44.9	130.7	34	30.8	-45.5	131.2	33	51.0	-46.1	131.7	33	10.9	-46.7	132.2	32	30.4	-47.3	132.7	31	49.5	-47.8	133.2	31	08.3	-48.3	133.6	30	26.7	-48.8	134.0	10
11	34	25.2	-45.2	131.5	33	45.3	-45.9	132.0	33	04.9	-46.4	132.5	32	24.2	-47.0	133.0	31	43.1	-47.5	133.4	31	01.7	-48.0	133.9	30	20.0	-48.6	134.3	29	37.9	-49.1	134.7	11
12	33	40.0	-45.5	132.3	32	59.4	-46.0	132.8	32	18.5	-46.6	133.3	31	37.2	-47.2	133.7	30	55.6	-47.7	134.0	30	13.7	-48.3	134.6	29	31.4	-48.8	135.0	28	48.8	-49.2	135.4	12
13	32	54.5	-45.8	133.1	32	13.4	-46.4	133.5	31	31.9	-46.9	134.0	30	50.0	-47.4	134.4	30	07.9	-48.0	134.8	29	25.4	-48.5	135.3	28	42.6	-48.9	135.6	27	59.6	-49.4	136.0	13
14	32	08.7	-46.0	133.8	31	27.0	-46.6	134.3	30	45.0	-47.2	134.7	30	02.6	-47.7	135.1	29	19.9	-48.2	135.5	28	36.9	-48.6	135.9	27	53.7	-49.1	136.3	27	10.2	-49.6	136.7	14
15	31	22.7	-46.3	134.6	30	40.4	-46.8	135.0	29	57.8	-47.4	135.4	29	14.9	-47.9	135.8	28	31.7	-48.3	136.2	27	48.3	-48.9	136.6	26	20.6	-49.8	137.3	25	44.9	-50.1	137.7	15
16	30	36.4	-46.6	135.3	29	53.6	-47.1	135.8	29	10.4	-47.6	136.1	28	27.0	-48.1	136.5	27	43.4	-48.6	136.9	26	59.4	-49.0	137.2	26	15.2	-49.4	137.6	25	30.8	-49.9	137.9	16
17	29	49.8	-46.8	136.1	29	06.5	-47.3	136.5	28	22.8	-47.8	136.8	27	38.9	-48.2	137.2	26	54.8	-48.8	137.6	26	10.4	-49.2	137.9	25	25.8	-49.7	138.2	24	40.9	-50.0	138.5	17
18	29	0.0	-47.0	136.8	28	19.2	-47.6	137.2	27	35.0	-48.0	137.5	26	50.7	-48.5	137.9	25	21.2	-49.4	138.5	24	36.1	-49.7	138.8	23	50.9	-50.2	139.1	18				
19	28	16.0	-47.2	137.5	27	31.6	-47.7	137.9	26	47.0	-48.2	138.2	26	02.2	-48.7	138.5	25	17.1	-49.1	138.8	24	31.8	-49.5	139.2	23	00.7	-50.4	139.7	19				
20	27	28.8	-47.5	138.2	26	43.9	-47.9	138.5	25	58.8	-48.3	138.9	25	13.5	-48.8	139.2	24	28.0	-49.2	139.5	23	42.3	-49.6	139.8	22	56.4	-50.0	140.0	22	10.3	-50.4	140.3	20
21	26	41.3	-47.6	138.9	25	56.0	-48.1	139.2	25	10.5	-48.6	139.5	24	24.7	-48.9	139.8	23	38.8	-49.4	140.1	22	52.7	-49.8	140.4	21	19.9	-50.6	140.9	21				
22	25	53.7	-47.8	139.6	25	07.9	-48.3	139.9	24	21.9	-48.7	140.2	23	35.8	-49.2	140.5	22	49.4	-49.5	140.7	22	0.9	-50.0	141.0	21	16.2	-50.3	141.2	20	29.3	-50.7	141.5	22
23	25	05.9	-48.1	140.2	24	19.6	-48.4	140.5	23	33.2	-48.8	140.8	22	46.6	-49.2	141.1	21	59.9	-49.7	141.3	21	12.9	-50.0	141.6	20	25.9	-50.5	141.8	19	38.6	-50.8	142.0	23
24	24	17.8	-48.1	140.9	23	31.2	-48.6	141.2	22	44.4	-49.0	141.4	21	57.4	-49.4	141.7	21	10.2	-49.8	141.9	20	22.9	-50.2	142.2	19	35.4	-50.5	142.4	18				
25	23	29.7	-48.4	141.5	22	42.6	-48.7	141.8	21	55.4	-49.2	142.1	21	08.0	-49.6	142.3	20	20.4	-49.9	142.5	19	32.7	-50.3	142.8	18	44.9	-50.7	143.0	17	56.9	-51.0	143.2	25
26	22	41.3	-48.5	142.2	21	53.9	-48.9	142.4	21	06.2	-49.3	142.7	20	18.4	-49.6	142.9	19	30.5	-50.0	143.1	18	42.4	-50.3	143.3	17	54.2	-50.7	143.5	16	05.9	-51.0	143.7	26
27	21	52.8	-48.6	142.8	21	05.0	-49.1	143.1	20	16.9	-49.4	143.3	19	28.8	-49.8	143.5	18	40.5	-50.2	143.7	17	52.1	-50.5	143.9	17	03.5	-50.8	144.1	16	14.9	-51.2	144.3	27
28	21	04.2	-48.8	143.5	20	15.9	-49.1	143.7	19	27.5	-49.5	143.9	18	39.0	-49.9	144.1	17	50.3	-50.2	144.3	16	12.7	-50.4	144.6	15	23.7	-51.2	144.8	28				
29	20	15.4	-48.9	144.1	19	26.8	-49.3	144.3	18	38.0	-49.6	144.5	17	42.6	-50.1	144.7	16	38.3	-50.7	144.7	15	56.9	-51.0	147.8	14	10.6	-51.3	148.0	14	15.3	-51.7	148.3	29
30	19	26.5	-49.0	144.7	18	37.5	-49.4	144.9	17	48.4	-49.8	145.1	16	59.1	-50.1	145.3	16	09.8	-50.4	145.4	15	20.3	-50.7	145.6	14	30.8	-51.1	145.7	13	41.1	-51.3	145.9	30
31	18	37.5	-49.1	145.3	17	48.1	-49.5	145.5	16	58.6	-49.8	145.7	15	19.4	-50.6	146.0	14	29.6	-50.9	146.1	13	39.7	-51.1	146.3	12	49.8	-51.5	146.4	31				
32	17	48.4	-49.3	145.9	16	58.6	-49.6	146.1	15	08.8	-49.9	146.2	14	28.8	-50.5	146.4	13	38.7	-50.8	146.7	12	48.6	-51.2	146.8	11	58.3	-51.5	146.9	32				
33	16	59.1	-49.3	146.5	16	09.0	-49.6	146.7	15	18.9	-50.1	146.8	14	28.6	-50.3	147.0	13	33.4	-50.7	147.1	12	47.9</											

40°, 320° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
Dec.	Hc	d	Z	Dec.																					
0	41 33.6 +39.9	120.8		41 02.6 +40.7	121.5		40 30.9 +41.6	122.3		39 58.5 +42.4	123.0		39 25.6 +43.2	123.7		38 52.0 +44.0	124.4		38 17.8 +44.8	125.0		37 43.1 +45.5	125.6		0
1	42 13.5 +39.3	119.8		41 43.3 +40.2	120.6		41 12.5 +41.1	121.3		40 40.9 +42.0	122.1		40 08.8 +42.8	122.8		39 36.0 +43.6	123.5		39 02.6 +44.4	124.2		38 28.6 +45.1	124.8		1
2	42 52.8 +38.7	118.8		42 23.5 +39.7	119.6		41 53.6 +40.6	120.3		41 22.9 +41.5	121.1		40 41.4 +41.0	120.1		41 33.9 +41.9	120.9		40 19.6 +43.2	122.6		39 47.0 +43.9	123.3		2
3	43 31.5 +38.2	117.7		43 03.2 +39.1	118.5		42 34.2 +40.1	119.4		42 04.4 +41.0	120.1		41 33.9 +41.9	120.9		41 02.8 +42.7	121.7		40 30.9 +43.6	122.4		39 58.5 +44.3	123.1		3
4	44 09.7 +37.5	116.6		43 42.3 +38.6	117.5		43 14.3 +39.5	118.3		42 45.4 +40.5	119.2		42 15.8 +41.4	120.0		41 45.5 +42.3	120.7		41 14.5 +43.1	121.5		40 42.8 +44.0	122.2		4
5	44 47.2 +36.6	115.5		44 20.9 +37.9	116.4		43 53.8 +38.9	117.3		43 25.9 +39.9	118.1		42 57.2 +40.9	119.0		42 27.8 +41.7	119.8		41 57.6 +42.7	120.6		41 26.8 +43.5	121.3		5
6	45 24.1 +36.2	114.4		44 58.8 +37.3	115.3		44 32.7 +38.4	116.2		44 05.8 +39.3	117.1		43 38.1 +40.3	118.0		43 09.5 +41.3	118.8		42 40.3 +42.1	119.6		42 10.3 +43.0	120.4		6
7	46 00.3 +35.5	113.3		45 36.1 +36.7	114.2		45 11.1 +37.7	115.2		44 45.1 +38.8	116.1		44 18.4 +39.7	116.9		43 50.8 +40.7	117.8		43 22.4 +41.7	118.6		42 53.3 +42.6	119.5		7
8	46 35.8 +34.9	112.1		46 12.8 +35.9	113.1		45 48.8 +37.0	114.0		45 23.9 +38.1	115.0		44 58.1 +39.2	115.9		44 31.5 +40.2	116.8		44 04.1 +41.1	117.6		43 35.9 +42.0	118.5		8
9	47 10.7 +34.0	110.9		46 48.7 +35.3	111.9		46 25.8 +36.4	112.9		46 02.0 +37.5	113.9		45 37.3 +38.5	114.8		45 11.7 +39.6	115.7		44 45.2 +40.6	116.6		44 17.9 +41.6	117.5		9
10	47 44.7 +33.3	109.7		47 24.0 +34.4	110.7		47 02.2 +35.7	111.7		46 39.5 +36.8	112.7		46 15.8 +37.9	113.7		45 51.3 +38.9	114.6		45 25.8 +40.0	115.6		44 59.5 +41.0	116.5		10
11	48 18.0 +32.4	108.5		47 58.4 +33.7	109.5		47 37.9 +34.9	110.6		47 16.3 +36.1	111.6		46 53.7 +37.3	112.6		46 30.2 +38.3	113.5		46 05.8 +39.4	114.5		45 40.5 +40.4	115.4		11
12	48 50.4 +31.6	107.2		48 32.1 +32.9	108.3		48 12.8 +34.1	109.3		47 52.4 +35.3	110.4		47 31.0 +36.5	111.4		47 08.5 +37.7	112.4		46 45.2 +38.7	113.4		46 20.9 +39.8	114.4		12
13	49 22.0 +30.7	105.9		49 05.0 +32.0	107.0		48 46.9 +33.3	108.1		48 27.7 +34.5	109.2		48 07.5 +35.7	110.2		47 46.2 +36.9	111.3		47 23.9 +38.1	112.3		47 00.7 +39.1	113.3		13
14	49 52.7 +29.7	104.6		49 37.0 +31.1	105.7		49 20.2 +32.4	106.8		49 02.2 +33.8	107.9		48 43.2 +35.0	109.0		48 23.1 +36.2	110.1		48 02.0 +37.4	111.1		47 39.8 +38.5	112.2		14
15	50 22.4 +28.8	103.2		50 08.1 +30.2	104.4		49 52.6 +31.6	105.5		49 36.0 +32.8	106.7		49 18.2 +34.2	107.8		48 59.3 +35.4	108.9		48 39.4 +36.6	110.0		48 18.3 +37.8	111.0		15
16	50 51.2 +27.8	101.8		50 38.3 +29.2	103.0		50 24.2 +30.6	104.2		50 08.8 +32.0	105.4		49 52.4 +33.3	106.5		49 34.7 +34.6	107.6		49 16.0 +35.8	108.8		48 56.1 +37.1	109.8		16
17	51 19.0 +26.8	100.4		51 07.5 +28.2	101.6		50 54.8 +29.6	102.9		50 40.8 +31.1	104.0		50 25.7 +32.4	105.2		50 09.3 +33.8	106.4		49 51.8 +35.1	107.5		49 33.2 +36.3	108.6		17
18	51 45.8 +25.6	99.0		51 35.7 +27.2	100.2		51 24.4 +28.7	101.5		51 11.9 +30.1	102.7		50 58.1 +31.5	103.9		50 43.1 +32.8	105.1		50 26.9 +34.2	106.3		50 09.5 +35.5	107.4		18
19	52 11.4 +24.6	97.5		52 02.9 +26.1	98.8		51 53.1 +27.6	100.1		51 42.0 +29.1	101.3		51 29.6 +30.5	102.5		51 16.0 +31.8	103.8		51 01.1 +33.3	105.0		50 45.0 +34.6	106.1		19
20	52 36.0 +23.4	96.0		52 29.0 +25.0	97.3		52 20.7 +26.6	98.6		52 11.1 +28.0	99.9		52 00.1 +29.6	101.1		51 47.9 +31.0	102.4		51 34.4 +32.4	103.6		51 19.6 +33.8	104.8		20
21	52 59.4 +22.3	94.5		52 54.0 +23.9	95.8		52 47.3 +25.4	97.1		52 39.1 +27.0	98.4		52 29.7 +28.5	99.7		52 18.9 +30.4	101.0		52 06.8 +31.4	102.3		51 53.4 +32.8	103.5		21
22	53 21.7 +21.0	93.0		53 17.9 +22.6	94.3		53 12.7 +24.2	95.6		53 06.1 +25.8	97.0		52 58.2 +27.4	98.3		52 48.9 +28.9	99.6		52 38.2 +30.4	100.9		52 26.2 +31.9	102.1		22
23	53 42.7 +19.7	91.4		53 40.5 +21.4	92.7		53 36.9 +23.1	94.1		53 31.9 +24.7	95.4		53 25.6 +26.2	96.8		53 17.8 +27.8	98.1		53 08.6 +29.4	99.4		52 58.1 +30.9	100.7		23
24	54 02.4 +18.4	89.8		54 01.0 +19.2	90.2		54 20.9 +21.2	90.2		54 00.0 +21.8	92.5		53 56.6 +23.5	93.9		53 51.8 +25.1	95.3		53 45.6 +26.7	96.6		53 38.0 +28.3	98.0		24
25	54 20.8 +17.2	88.1		54 22.1 +18.8	89.5		54 21.8 +20.5	90.9		54 20.1 +22.2	92.3		54 16.9 +23.9	93.7		54 12.3 +25.5	95.1		54 06.3 +27.1	96.5		53 58.8 +28.7	97.8		25
26	54 38.0 +15.7	86.5		54 40.9 +17.5	87.9		54 42.3 +19.3	89.3		54 42.3 +21.0	90.7		54 40.8 +22.7	92.1		54 37.8 +24.4	93.5		54 33.4 +26.0	95.0		54 27.5 +27.6	96.3		26
27	54 53.7 +14.4	84.8		54 58.4 +16.1	86.2		55 01.6 +17.8	87.7		55 03.3 +19.6	89.1		55 03.5 +21.3	90.5		55 02.2 +23.0	92.0		54 59.4 +24.7	93.4		54 55.1 +26.3	94.8		27
28	55 08.1 +12.9	83.1		55 14.5 +14.7	84.6		55 19.4 +16.5	86.0		55 22.9 +18.2	87.4		55 24.8 +20.0	88.9		55 25.2 +21.7	90.3		55 24.1 +23.4	91.8		55 21.4 +25.2	93.2		28
29	55 21.0 +11.5	81.4		55 29.2 +13.3	82.9		55 35.9 +15.1	84.3		55 41.1 +16.8	85.8		55 44.8 +18.6	87.2		55 46.9 +20.4	88.7		55 47.5 +22.2	90.2		55 46.6 +23.8	91.6		29
30	55 32.5 +10.0	79.7		55 42.5 +11.8	81.1		55 51.0 +13.6	82.6		55 58.0 +15.4	84.1		56 03.4 +17.2	85.5		56 07.3 +19.0	87.0		56 09.7 +20.7	88.5		56 10.4 +22.6	89.0		30
31	55 42.5 +8.5	77.9		55 54.3 +10.3	79.4		56 04.6 +12.1	80.8		56 13.4 +13.9	82.3		56 20.6 +15.8	83.8		56 26.3 +17.6	85.3		56 30.4 +19.4	86.8		56 33.0 +21.1	88.3		31
32	55 51.0 +7.0	76.2		56 04.6 +8.8	77.6		56 16.7 +10.6	79.1		56 27.3 +12.4	80.6		56 36.4 +14.2	82.1		56 43.9 +16.1	83.6		56 49.8 +17.9	85.1		56 54.1 +19.8	86.6		32
33	55 58.0 +5.4	74.4		56 13.4 +7.2	75.8		56 27.3 +9.1	77.3		56 39.7 +10.9	78.8		56 50.6 +12.8	80.3		57 00.0 +14.5	81.8		57 07.7 +16.4	83.3		57 13.9 +18.3	84.9		33
34	56 03.4 +3.9	72.6		56 20.6 +5.7	74.1		56 36.4 +7.5	75.5		56 50.6 +9.4	77.0		57 03.4 +11.1	78.5		57 14.5 +13.1	80.0		57 24.1 +15.0	81.6		57 32.2 +16.7	83.1		34
35	56 07.3 +2.4	70.8		56 26.3 +4.1	72.3		56 43.9 +5.9	73.7		57 00.0 +7.7	75.2		57 14.5 +9.6	76.7		57 27.6 +11.5	78.2		57 39.1 +13.3	79.8		57 48.9 +15.2	81.3		35
36	56 09.7 +0.7	69.0		56 30.4 +2.6	70.5		56 49.8 +4.3	71.9		57 07.7 +6.2	73.4		57 24.1 +8.1	74.9		57 39.1 +9.8	76.4		57 52.4 +11.7	77.9		58 04.1 +13.7	79.5		36
37	56 10.4 -0.7	67.2		56																					

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 40° , 320°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	41	33.6	-40.3	120.8	41	02.6	-41.2	121.5	40	30.9	-42.1	122.3	39	58.5	-42.8	123.0	39	25.6	-43.7	123.7	38	52.0	-44.4	124.4	38	17.8	-45.1	125.0	37	43.1	-45.8	125.6	0
1	40	53.3	-40.8	121.8	40	21.4	-41.7	122.5	39	48.8	-42.5	123.2	39	15.7	-43.3	123.9	38	41.9	-44.0	124.6	38	07.6	-44.8	125.2	37	32.7	-45.4	125.8	36	57.3	-46.1	126.5	1
2	40	12.5	-41.3	122.7	39	39.7	-42.1	123.4	39	06.3	-42.9	124.1	38	32.4	-43.7	124.8	37	57.9	-44.4	125.4	37	22.8	-45.1	126.1	36	47.3	-45.8	126.7	36	11.2	-46.5	127.3	2
3	39	31.2	-41.8	123.7	38	57.6	-42.6	124.4	38	23.4	-43.3	125.0	37	48.7	-44.0	125.7	37	13.5	-44.8	126.3	36	37.7	-45.4	126.9	36	01.5	-46.1	127.5	35	24.7	-46.7	128.0	3
4	38	49.4	-42.2	124.6	38	15.0	-42.9	125.3	37	40.1	-43.7	125.9	37	04.7	-44.4	126.5	36	28.7	-45.1	127.1	35	52.3	-45.8	127.7	35	15.4	-46.4	128.3	34	38.0	-47.0	128.8	4
5	38	07.2	-42.6	125.5	37	32.1	-43.4	126.1	36	56.4	-44.0	126.8	36	20.3	-44.8	127.4	35	43.6	-45.4	127.9	35	06.5	-46.1	128.5	34	29.0	-46.7	129.0	33	51.0	-47.3	129.6	5
6	37	24.6	-43.0	126.4	36	48.7	-43.7	127.0	36	12.4	-44.4	127.6	35	35.5	-45.1	128.2	34	58.2	-45.7	128.7	34	20.4	-46.3	129.3	33	42.3	-47.0	129.8	33	03.7	-47.6	130.3	6
7	36	41.6	-43.4	127.3	36	05.0	-44.0	127.9	35	28.0	-44.8	128.4	34	50.4	-45.4	129.0	34	12.5	-46.1	129.5	33	34.1	-46.7	130.0	32	55.3	-47.2	130.5	32	16.1	-47.8	131.0	7
8	35	58.2	-43.7	128.1	35	21.0	-44.5	128.7	34	43.2	-45.0	129.2	34	05.0	-45.7	129.8	33	26.4	-46.3	130.3	32	47.4	-46.9	130.8	32	08.1	-47.5	131.3	31	28.3	-48.0	131.7	8
9	35	14.5	-44.1	129.0	34	36.5	-44.7	129.5	33	58.2	-45.4	130.0	33	19.3	-45.9	130.6	32	40.1	-46.5	131.0	32	00.5	-47.1	131.5	31	20.6	-47.7	132.0	30	40.3	-48.3	132.4	9
10	34	30.4	-44.4	129.8	33	51.8	-45.0	130.3	33	12.8	-45.7	130.8	32	33.4	-46.3	131.3	31	53.6	-46.9	131.8	31	13.4	-47.4	132.2	30	32.9	-48.0	132.7	29	52.0	-48.4	133.1	10
11	33	46.0	-44.7	130.6	33	06.8	-45.4	131.1	32	27.1	-45.9	131.6	31	47.1	-46.5	132.1	31	06.7	-47.1	132.5	30	26.0	-47.6	133.0	29	44.9	-48.1	133.4	29	03.6	-48.7	133.8	11
12	33	01.3	-45.0	131.4	32	21.4	-45.6	131.9	31	41.2	-46.2	132.4	31	00.6	-46.8	132.8	30	19.6	-47.3	133.2	29	38.4	-47.9	133.7	28	56.8	-48.4	134.1	28	14.9	-48.8	134.5	12
13	32	16.3	-45.3	132.2	31	35.8	-45.9	132.7	30	55.0	-46.5	133.1	30	13.8	-47.0	133.5	29	32.3	-47.5	134.0	28	50.5	-48.0	134.4	28	08.4	-48.5	134.7	27	26.1	-49.1	135.1	13
14	31	31.0	-45.6	133.0	30	49.9	-46.1	133.4	30	08.5	-46.7	133.8	29	26.8	-47.2	134.3	28	44.8	-47.8	134.7	28	02.5	-48.3	135.0	27	19.9	-48.8	135.4	26	37.0	-49.2	135.8	14
15	30	45.4	-45.8	133.7	30	03.8	-46.4	134.2	29	21.8	-46.9	134.6	28	39.6	-47.5	135.0	27	57.0	-47.9	135.3	27	14.2	-48.4	135.7	26	31.1	-48.9	136.1	25	47.8	-49.4	136.4	15
16	29	59.6	-46.1	134.5	29	17.4	-46.6	134.9	28	34.9	-47.1	135.3	27	52.1	-47.6	135.7	27	09.1	-48.2	136.0	26	25.8	-48.6	136.4	25	42.2	-49.1	136.7	24	58.4	-49.5	137.0	16
17	29	13.5	-46.3	135.2	28	30.8	-46.9	135.6	27	47.8	-47.4	136.0	27	04.5	-47.9	136.3	26	20.9	-48.3	136.7	25	37.2	-48.8	137.0	24	53.1	-49.2	137.3	24	08.9	-49.7	137.7	17
18	28	27.2	-46.6	135.9	27	43.9	-47.0	136.3	27	00.4	-47.6	136.7	26	16.6	-48.0	137.0	25	32.6	-48.5	137.3	24	48.4	-49.0	137.7	23	19.2	-49.8	138.0	23	21.9	-49.8	138.3	18
19	27	40.6	-46.8	136.7	26	56.9	-47.3	137.0	26	12.8	-47.7	137.4	25	28.6	-48.2	137.7	24	44.1	-48.7	138.0	23	59.4	-49.1	138.3	23	14.5	-49.5	138.6	22	29.4	-49.9	138.9	19
20	26	53.8	-46.9	137.4	26	09.6	-47.5	137.7	25	25.1	-47.9	138.0	24	40.4	-48.4	138.3	23	55.4	-48.8	138.6	23	10.3	-49.3	138.9	22	25.0	-49.7	139.2	21	39.5	-50.1	139.5	20
21	26	06.9	-47.2	138.1	25	22.1	-47.6	138.4	24	37.2	-48.1	138.7	23	52.0	-48.6	139.0	23	06.6	-49.0	139.3	22	21.0	-49.3	139.5	21	35.3	-49.8	139.8	20	49.4	-50.2	140.1	21
22	25	19.7	-47.4	138.7	24	34.5	-47.8	139.1	23	49.1	-48.3	139.3	23	03.4	-48.7	139.6	22	17.6	-49.1	139.9	21	31.7	-49.7	140.2	20	45.5	-49.9	140.4	19	59.2	-50.3	140.6	22
23	24	32.3	-47.5	139.4	23	46.7	-48.0	139.7	23	00.8	-48.4	140.0	22	14.7	-48.8	140.3	21	28.5	-49.2	140.5	20	42.1	-49.6	140.8	19	55.6	-50.1	141.0	19	08.9	-50.4	141.2	23
24	23	44.8	-47.7	140.1	22	58.7	-48.2	140.4	22	12.4	-48.2	140.6	21	25.9	-49.0	140.9	20	39.3	-49.4	141.1	19	52.5	-49.8	141.4	19	05.5	-50.1	141.6	18	18.5	-50.6	141.8	24
25	22	57.1	-47.9	140.8	22	10.5	-48.3	141.0	21	23.8	-48.7	141.3	20	36.9	-49.1	141.5	19	49.9	-49.5	141.7	19	02.7	-49.9	142.0	18	15.4	-50.3	142.2	17	27.9	-50.6	142.4	25
26	22	09.2	-48.0	141.4	21	22.2	-48.4	141.7	20	35.1	-48.9	141.9	19	47.8	-49.2	142.1	19	00.4	-49.6	142.3	18	12.8	-50.0	142.5	17	25.1	-50.3	142.7	16	37.3	-50.7	142.9	26
27	21	21.2	-48.2	142.1	20	33.8	-48.6	142.3	19	46.2	-48.9	142.5	18	58.6	-49.4	142.7	18	10.8	-49.8	142.9	17	22.8	-50.1	143.1	16	34.8	-50.5	143.3	15	46.6	-50.8	143.5	27
28	20	33.0	-48.3	142.7	19	45.2	-48.7	142.9	18	57.3	-49.1	143.1	17	19.8	-49.6	143.3	16	31.2	-49.9	143.4	15	20.7	-50.1	143.6	14	45.8	-50.9	143.8	14	55.8	-50.9	144.0	28
29	11	35.4	-49.4	143.3	10	43.8	-49.7	143.4	9	52.1	-50.0	143.5	8	0.3	-50.3	143.6	7	19.8	-49.6	143.9	6	24.9	-50.8	144.2	5	33.0	-51.4	144.9	39				
30	10	46.0	-49.5	149.9	9	54.1	-49.8	150.0	8	02.1	-50.1	150.1	7	19.7	-50.4	150.7	6	21.0	-50.1	150.9	5	27.3	-50.6	150.8	4	42.6	-51.2	150.9	40				
31	9	56.5	-49.5	150.5	9	04.3	-49.8	150.6	8	12.0	-50.1	150.7	7	19.7	-50.4	150.7	6	36.7	-50.7	151.3	5	40.4	-50.4	151.4	4	51.3	-50.5	151.5	41				
32	9	07.0	-49.6	151.1	8	14.5	-49.9	151.1	7	21.9	-50.1	151.2	6	29.3	-50.4	151.3	5	43.7	-50.7	151.5	4	44.0	-50.4	151.6	3	51.4	-51.2	151.8	42				
33	8	17.4	-49.6	151.6	7	24.6	-49.9	151.7	6	31.8																							

41°, 319° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	40	48.8	+39.4	119.9	40	18.6	+40.2	120.6	39	47.6	+41.2	121.4	39	16.1	+42.0	122.1	38	43.9	+42.8	122.8	38	11.2	+43.6	123.4	37	37.9	+44.3	124.1	37	04.0	+45.1	124.7	0
1	41	28.2	+38.8	118.9	40	58.8	+39.8	119.7	40	28.8	+40.7	120.4	39	58.1	+41.5	121.1	39	26.7	+42.4	121.8	38	54.8	+43.2	122.5	38	22.2	+44.0	123.2	37	49.1	+44.7	123.9	1
2	42	07.0	+38.3	117.9	41	38.6	+39.3	118.7	41	09.5	+40.1	119.4	40	39.6	+41.1	120.2	40	09.1	+41.9	120.9	39	38.0	+42.7	121.6	39	06.2	+43.5	122.3	38	33.8	+44.3	123.0	2
3	42	45.3	+37.7	116.8	42	17.9	+38.6	117.7	41	49.6	+39.7	118.5	41	20.7	+40.6	119.2	40	51.0	+41.5	120.0	40	20.7	+42.3	120.7	39	49.7	+43.2	121.4	38	18.1	+44.0	122.1	3
4	43	23.0	+37.1	115.8	42	56.5	+38.2	116.6	42	29.3	+39.1	117.4	42	01.3	+40.0	118.2	41	32.5	+41.0	119.0	41	03.0	+41.9	119.8	40	32.9	+42.7	120.5	40	02.1	+43.5	121.3	4
5	44	00.1	+36.5	114.7	43	34.7	+37.5	115.6	43	08.4	+38.5	116.4	42	41.3	+39.5	117.2	42	13.5	+40.4	118.0	41	44.9	+41.4	118.8	41	15.6	+42.3	119.6	40	45.6	+43.1	120.4	5
6	44	36.6	+35.8	113.6	44	12.2	+36.9	114.5	43	46.9	+38.0	115.3	43	20.8	+39.0	116.2	42	53.9	+40.0	117.0	42	26.3	+40.8	117.9	41	57.9	+41.7	118.7	41	28.7	+42.7	119.4	6
7	45	12.4	+35.2	112.4	44	49.1	+36.2	113.4	44	24.9	+37.3	114.3	43	59.8	+38.3	115.2	43	33.9	+39.3	116.0	43	07.1	+40.4	116.9	42	39.6	+41.3	117.7	42	11.4	+42.2	118.5	7
8	45	47.6	+34.4	111.3	45	25.3	+35.6	112.2	45	02.2	+36.6	113.2	44	38.1	+37.8	114.1	44	13.2	+38.8	115.0	43	47.5	+39.7	115.8	43	20.9	+40.8	116.7	42	53.6	+41.7	117.5	8
9	46	22.0	+33.7	110.1	46	00.9	+34.8	111.1	45	38.8	+36.0	112.0	45	15.9	+37.0	113.0	44	52.0	+38.1	113.9	44	27.2	+39.2	114.8	44	01.7	+40.2	115.7	43	35.3	+41.1	116.5	9
10	46	55.7	+32.9	108.9	46	35.7	+34.1	109.9	46	14.8	+35.3	110.9	45	52.9	+36.5	111.9	45	30.1	+37.6	112.8	45	06.4	+38.6	113.7	44	41.9	+39.6	114.6	44	16.4	+40.6	115.5	10
11	47	28.6	+32.0	107.7	47	09.8	+33.4	108.7	46	50.1	+34.5	109.7	46	29.4	+35.7	110.7	46	07.7	+36.8	111.7	45	45.0	+38.0	112.6	45	21.5	+39.0	113.6	44	57.0	+40.1	114.5	11
12	48	00.6	+31.3	106.4	47	43.2	+32.5	107.5	47	24.6	+33.8	108.5	47	05.1	+34.9	109.5	46	44.5	+36.2	110.5	46	23.0	+37.3	111.5	46	00.5	+38.4	112.5	45	37.1	+39.4	113.4	12
13	48	31.9	+30.4	105.1	48	15.7	+31.7	106.2	47	58.4	+33.0	107.3	47	40.0	+34.2	108.3	47	20.7	+35.4	109.4	47	00.3	+36.5	110.4	46	38.9	+37.7	111.4	46	16.5	+38.8	112.4	13
14	49	02.3	+29.4	103.8	48	47.4	+30.8	104.9	48	31.4	+32.1	106.0	48	14.2	+33.5	107.1	47	56.1	+34.6	108.2	47	36.8	+35.9	109.2	47	16.6	+37.0	110.2	46	55.3	+38.2	111.2	14
15	49	31.7	+28.6	102.5	49	18.2	+29.9	103.6	49	03.5	+31.2	104.7	48	47.7	+32.5	105.9	48	30.7	+33.9	106.9	48	12.7	+35.1	108.0	47	53.6	+36.3	109.1	47	33.5	+37.4	110.1	15
16	50	00.3	+27.5	101.1	49	48.1	+29.0	102.3	49	34.7	+30.4	103.4	49	20.2	+31.7	104.6	49	04.6	+33.0	105.7	48	47.8	+34.3	106.8	48	29.9	+35.5	107.9	48	10.9	+36.8	108.9	16
17	50	27.8	+26.6	99.7	50	17.1	+28.0	100.9	50	05.1	+29.4	102.1	49	51.9	+30.8	103.3	49	37.6	+32.1	104.4	49	22.1	+33.4	105.5	49	05.4	+34.8	106.7	48	47.7	+36.0	107.8	17
18	50	54.4	+25.5	98.3	50	45.1	+27.0	99.5	50	34.5	+28.4	100.7	50	22.7	+29.9	101.9	50	09.7	+31.3	103.1	49	55.5	+32.6	104.3	49	40.2	+33.9	105.4	49	23.7	+35.2	106.5	18
19	51	19.9	+24.4	96.9	51	12.1	+25.9	98.1	51	02.9	+27.5	99.3	50	52.6	+28.9	100.6	50	41.0	+30.3	101.8	50	28.1	+31.7	102.9	50	14.1	+33.0	104.1	49	58.9	+34.3	105.3	19
20	51	44.3	+23.3	95.4	51	38.0	+24.8	96.7	51	30.4	+26.3	97.9	51	21.5	+27.8	99.2	51	11.3	+29.3	100.4	50	59.8	+30.8	101.6	50	47.1	+32.2	102.8	50	33.2	+33.5	104.0	20
21	52	07.6	+22.1	93.9	52	02.8	+23.8	95.2	51	56.7	+25.3	96.5	51	49.3	+26.8	97.7	51	40.6	+28.3	99.0	51	30.6	+29.7	100.2	51	19.3	+31.2	101.5	51	06.7	+32.6	102.7	21
22	52	29.7	+21.0	92.4	52	26.6	+22.5	93.7	52	22.0	+24.2	95.0	52	16.1	+25.7	96.3	52	08.9	+27.2	97.6	52	0.3	+28.8	98.8	51	50.5	+30.2	100.1	51	39.3	+31.7	101.3	22
23	52	50.7	+19.7	90.9	52	49.1	+21.4	92.2	52	46.2	+22.9	93.5	52	41.8	+24.6	94.8	52	36.1	+26.2	96.1	52	29.1	+27.7	97.4	52	20.7	+29.2	98.7	52	11.0	+30.6	100.0	23
24	53	10.4	+18.5	89.3	53	10.5	+20.1	90.6	53	09.1	+21.8	92.0	53	06.4	+24.3	93.3	53	02.3	+25.0	94.6	52	56.8	+26.5	95.9	52	49.9	+28.1	97.2	52	41.6	+29.7	98.5	24
25	53	28.9	+17.2	87.7	53	30.6	+18.9	89.0	53	30.9	+20.6	90.4	53	29.8	+22.2	91.7	53	27.3	+23.8	93.1	53	23.3	+25.5	94.4	53	18.0	+27.0	95.8	53	11.3	+28.5	97.1	25
26	53	46.1	+15.8	86.1	53	49.5	+17.6	87.4	53	51.5	+19.2	88.8	53	52.0	+21.0	90.2	53	51.1	+22.6	91.5	53	48.8	+24.2	92.9	53	45.0	+25.9	94.3	53	39.8	+27.5	95.6	26
27	54	02.0	+14.5	84.4	54	07.1	+16.2	85.8	54	10.7	+18.0	87.2	54	13.0	+19.6	88.6	54	13.7	+21.4	90.0	54	13.0	+23.0	91.4	54	10.9	+24.7	92.7	54	07.3	+26.3	94.1	27
28	54	16.5	+13.1	82.8	54	23.3	+14.9	84.2	54	28.7	+16.6	85.6	54	32.6	+18.3	87.0	54	35.1	+20.0	88.4	54	36.0	+21.8	89.8	54	35.6	+23.4	91.2	54	33.6	+25.1	92.6	28
29	54	29.6	+11.8	81.1	54	38.2	+13.5	82.5	54	45.3	+15.2	83.9	54	52.5	+17.5	85.6	54	54.7	+19.5	87.2	54	56.2	+22.6	89.3	54	36.2	+15.1	90.2	54	21.6	+17.0	87.2	29
30	55	18.2	+2.9	70.8	55	37.3	+4.7	72.1	55	55.0	+6.5	73.5	56	11.3	+8.2	75.0	56	26.2	+10.0	76.4	56	39.5	+11.8	77.9	56	51.3	+13.7	79.4	57	01.6	+15.5	80.9	35
31	55	21.1	+1.4	69.0	55	42.0	+3.1	70.4	56	01.5	+4.8	71.8	56	19.5	+6.7	73.2	56	36.2	+8.4	74.6	56	51.3	+10.3	76.1	57	05.0	+12.1	77.6	57	17.1	+13.9	79.1	36
32	55	22.5	-0.1	67.2	55	45.1	+1.6	68.6	56	06.3	+3.3	70.0	56	26.2	+5.1	71.4	56	44.6	+6.9	72.8	57	01.6	+8.7	74.3	57	17.1	+10.5	75.8	57	31.0	+12.4	77.3	37

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 41° , 319°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z																						
0	40 48.8	-39.9	119.9	40 18.6	-40.8	120.6	39 47.6	-41.6	121.4	39 16.1	-42.4	122.1	38 43.9	-43.2	122.8	38 11.2	-44.0	123.4	37 37.9	-44.8	124.1	37 04.0	-45.4	124.7	0
1	40 08.9	-40.4	120.9	39 37.8	-41.2	121.6	39 06.0	-42.0	122.3	38 33.7	-42.9	123.0	38 00.7	-43.6	123.6	37 27.2	-44.3	124.3	36 53.1	-45.0	124.9	36 18.6	-45.8	125.5	1
2	39 28.5	-40.8	121.9	38 56.6	-41.7	122.5	38 24.0	-42.5	123.2	37 50.8	-43.2	123.9	37 17.1	-43.9	124.5	36 42.9	-44.7	125.1	36 08.1	-45.4	125.7	35 32.8	-46.0	126.3	2
3	38 47.7	-41.3	122.8	38 14.9	-42.1	123.5	37 41.5	-42.8	124.1	37 07.6	-43.6	124.7	36 33.2	-44.4	125.4	35 58.2	-45.1	126.0	35 22.7	-45.7	126.5	34 46.8	-46.4	127.1	3
4	38 06.4	-41.7	123.7	37 32.8	-42.5	124.4	36 58.7	-43.3	125.0	36 24.0	-44.0	125.6	35 48.8	-44.7	126.2	35 13.1	-45.3	126.8	34 37.0	-46.0	127.3	34 00.4	-46.6	127.9	4
5	37 24.7	-42.2	124.6	36 50.3	-42.9	125.3	36 15.4	-43.6	125.9	35 40.0	-44.3	126.4	35 04.1	-44.9	127.0	34 27.8	-45.7	127.6	33 51.0	-46.3	128.1	33 13.8	-46.9	128.6	5
6	36 42.5	-42.5	125.5	36 07.4	-43.2	126.1	35 31.8	-43.9	126.7	34 55.7	-44.6	127.3	34 19.2	-45.4	127.8	33 42.1	-45.9	128.3	33 04.7	-46.6	128.9	32 26.9	-47.2	129.4	6
7	36 00.0	-42.9	126.4	35 24.2	-43.6	127.0	34 47.9	-44.3	127.5	34 11.1	-45.0	128.1	33 33.8	-45.6	128.6	32 56.2	-46.2	129.1	32 18.1	-46.8	129.6	31 39.7	-47.4	130.1	7
8	35 17.1	-43.2	127.3	34 40.6	-44.0	127.8	33 03.6	-44.7	128.4	33 26.1	-45.2	128.9	32 48.2	-45.8	129.4	32 10.0	-46.5	129.9	31 31.3	-47.0	130.3	30 52.3	-47.6	130.8	8
9	34 33.9	-43.6	128.1	33 56.6	-44.2	128.6	33 18.9	-44.9	129.2	32 40.9	-45.6	129.7	32 02.4	-46.2	130.1	31 23.5	-46.7	130.6	30 44.3	-47.4	131.1	30 04.7	-47.9	131.5	9
10	33 50.3	-44.0	128.9	33 12.4	-44.6	129.4	32 34.0	-45.2	129.9	31 55.3	-45.8	130.4	31 16.2	-46.4	130.9	30 36.8	-47.0	131.3	29 56.9	-47.5	131.8	29 16.8	-48.1	132.2	10
11	33 06.3	-44.2	129.8	32 27.8	-44.9	130.2	31 48.8	-45.5	130.7	31 09.5	-46.1	131.2	30 29.8	-46.7	131.6	29 49.8	-47.2	132.1	29 09.4	-47.7	132.5	28 28.7	-48.3	132.9	11
12	32 22.1	-44.5	130.6	31 42.9	-45.2	131.0	31 03.3	-45.7	131.5	30 23.4	-46.3	131.9	29 43.1	-46.8	132.4	29 02.6	-47.5	132.8	28 21.7	-48.0	133.2	27 40.4	-48.4	133.6	12
13	31 37.6	-44.9	131.3	30 57.7	-45.4	131.8	30 17.6	-46.0	132.2	29 37.1	-46.6	132.7	28 56.3	-47.2	133.1	28 15.1	-47.6	133.5	27 33.7	-48.2	133.9	26 52.0	-48.7	134.2	13
14	30 52.7	-45.1	132.1	30 12.3	-45.7	132.6	29 31.6	-46.3	133.0	28 50.5	-46.8	133.4	28 09.1	-47.3	133.8	27 27.5	-47.9	134.2	26 45.5	-48.3	134.5	26 03.3	-48.8	134.9	14
15	30 07.6	-45.4	132.9	29 26.6	-45.9	133.3	28 45.3	-46.5	133.7	28 03.7	-47.0	134.1	27 21.8	-47.5	134.5	26 39.6	-48.0	134.8	25 57.2	-48.5	135.2	25 14.5	-49.0	135.5	15
16	29 22.2	-45.6	133.6	28 40.7	-46.2	134.0	27 58.8	-46.7	134.4	27 16.7	-47.2	134.8	26 34.3	-47.8	135.2	25 51.6	-48.2	135.5	25 08.7	-48.7	135.8	24 25.5	-49.1	136.2	16
17	28 36.6	-45.8	134.4	27 54.5	-46.4	134.8	27 12.1	-46.9	135.1	26 29.5	-47.5	135.5	25 46.5	-47.9	135.8	25 03.4	-48.4	136.2	24 20.0	-48.9	136.5	23 36.4	-49.3	136.8	17
18	27 50.8	-46.1	135.1	27 08.1	-46.6	135.5	26 25.2	-47.1	135.8	25 42.0	-47.6	136.2	24 58.6	-48.0	136.5	24 15.0	-48.5	136.8	23 31.1	-49.0	137.1	22 47.1	-49.5	137.4	18
19	27 04.7	-46.3	135.8	26 21.5	-46.8	136.2	25 38.1	-47.3	136.5	24 54.4	-47.7	136.8	24 10.6	-48.3	137.2	23 26.5	-48.8	137.5	22 42.1	-49.1	137.7	21 57.6	-49.5	138.0	19
20	26 18.4	-46.5	136.6	25 34.7	-47.0	136.9	24 50.8	-47.5	137.2	24 06.7	-48.0	137.5	23 22.3	-48.4	137.8	22 37.7	-48.8	138.1	21 53.0	-49.3	138.4	21 08.1	-49.7	138.6	20
21	25 31.9	-46.7	137.3	24 47.7	-47.2	137.6	24 03.3	-47.7	137.9	23 18.7	-48.1	138.2	22 33.9	-48.6	138.5	21 48.9	-49.0	138.7	21 03.7	-49.4	139.0	20 18.4	-49.9	139.2	21
22	24 45.2	-46.9	137.9	24 00.5	-47.4	138.2	23 15.6	-47.8	138.5	22 30.6	-48.3	138.8	21 45.3	-48.7	139.1	20 59.9	-49.1	139.3	20 14.3	-49.5	139.6	19 28.5	-49.9	139.8	22
23	23 58.3	-47.1	138.6	23 13.1	-47.5	138.9	22 27.8	-48.0	139.2	21 42.3	-48.4	139.5	20 56.6	-48.8	139.7	20 10.8	-49.3	140.0	19 24.8	-49.7	140.2	18 38.6	-50.0	140.4	23
24	23 11.2	-47.3	139.3	22 25.6	-47.7	139.6	21 39.8	-48.1	139.8	20 53.9	-48.6	140.1	20 07.8	-49.0	140.3	19 21.5	-49.4	140.6	18 35.1	-49.4	140.8	17 48.6	-50.2	141.0	24
25	22 23.9	-47.4	140.0	21 37.9	-47.9	140.2	20 51.7	-48.3	140.5	20 05.3	-48.7	140.7	19 18.8	-49.1	140.9	18 32.1	-49.4	141.2	17 45.3	-49.8	141.4	16 58.4	-50.2	141.6	25
26	21 36.5	-47.6	140.6	20 50.0	-47.9	140.9	20 03.4	-48.4	141.1	19 16.6	-48.8	141.3	18 29.7	-49.2	141.6	17 42.7	-49.6	141.8	16 55.5	-50.1	141.9	16 08.2	-50.4	142.1	26
27	20 48.9	-47.7	141.3	20 02.1	-48.2	141.5	19 15.0	-48.5	141.7	18 27.8	-48.9	142.0	17 40.5	-49.3	142.2	16 53.1	-49.7	142.3	16 05.5	-50.1	142.5	15 17.8	-50.4	142.7	27
28	20 01.2	-47.8	141.9	19 13.9	-48.2	142.2	18 26.5	-48.7	142.4	17 38.9	-49.1	142.6	16 51.2	-49.4	142.8	16 03.4	-49.8	142.9	15 15.4	-50.1	143.1	14 27.4	-50.5	143.3	28
29	19 13.4	-48.0	142.6	18 25.7	-48.4	142.8	17 37.8	-48.8	143.0	16 49.8	-49.1	143.2	16 01.8	-49.5	143.3	15 13.6	-49.9	143.5	14 25.3	-50.2	143.7	13 36.9	-50.6	143.8	29
30	18 25.4	-48.1	143.2	17 37.3	-48.5	143.4	16 49.0	-48.8	143.6	16 00.7	-49.2	143.8	15 12.3	-49.7	143.9	14 23.7	-49.9	144.1	13 35.1	-50.3	144.2	12 46.3	-50.6	144.4	30
31	17 37.3	-48.3	143.8	16 48.8	-48.6	144.0	16 00.2	-49.0	144.2	15 11.5	-49.4	144.4	14 22.6	-49.6	144.5	13 33.8	-50.1	144.7	12 44.8	-50.4	144.8	11 55.7	-50.7	144.9	31
32	16 49.0	-48.3	144.5	16 00.2	-48.7	144.6	15 11.2	-49.1	144.8	14 22.1	-49.4	144.9	13 33.0	-49.8	145.1	12 43.7	-50.1	145.2	11 54.4	-50.4	145.3	11 05.0	-50.8	145.5	32
33	16 00.7	-48.4	145.1	15 11.5	-48.9	145.2	14 22.1	-49.1	145.4	13 32.7	-49.5	145.5	12 43.2	-49.9	145.7	11 53.6	-50.2	145.8	11 04.0	-50.5	145.9	10 14.2	-50.8	146.0	33
34	15 12.3	-48.6	145.7	15 21.0	-49.5	146.3	14 23.0	-49.6	146.0	13 33.4	-49.6	146.6	12 43.7	-49.9	146.7	11 53.3	-50.4	146.8	10 03.4	-50.8	146.9	9 23.4	-50.8	147.0	34
35	14 23.7	-48.6	146.3	13 33.8	-49.0	146.4	12 43.7	-49.6	146.6	11 30.4	-49.9	146.7	10 13.4	-49.9	146.8	9 22.9	-50.6	147.0	8 32.6	-50.9	147.1	7 41.7	-51.0	147.6	35
36	13 35.1	-48.8	146.9	12 44.8	-49.1	147.0	11 04.0	-49.8	147.3	10 13.5	-50.1	147.4	9 22.9	-50.3	147.5	8 32.3	-50.6	147.							

42°, 318° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.				
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z					
0	40 03.6 +38.9	119.0	39 34.1 +39.9	119.8	39 04.0 +40.7	120.5	38 33.2 +41.6	121.2	38 01.9 +42.4	121.8	37 29.9 +43.2	122.5	36 57.4 +44.0	123.1	36 24.4 +44.6	123.8	36 09.0 +44.4	122.9	37 53.4 +43.9	122.1	37 29.1 +41.8	117.6	38 37.3 +43.6	121.2	39 20.9 +43.2	120.3	0		
1	40 42.5 +38.4	118.0	40 14.0 +39.3	118.8	39 44.7 +40.3	119.5	39 14.8 +41.1	120.2	38 44.3 +41.9	120.9	38 13.1 +42.8	121.6	37 41.4 +43.5	122.3	37 09.0 +44.4	122.9	38 42.9 +43.2	121.4	37 53.4 +43.9	122.1	37 29.1 +41.8	117.6	38 37.3 +43.6	121.2	39 20.9 +43.2	120.3	1		
2	41 20.9 +37.9	117.0	40 53.3 +38.8	117.8	40 25.0 +39.7	118.6	39 55.9 +40.7	119.3	39 26.2 +41.6	120.0	38 55.9 +42.4	120.7	38 24.9 +43.2	121.4	37 53.4 +43.9	122.1	37 29.1 +41.8	117.6	38 37.3 +43.6	121.2	39 20.9 +43.2	120.3	2						
3	41 58.8 +37.3	116.0	41 32.1 +38.3	116.8	41 04.7 +39.2	117.6	40 36.6 +40.1	118.3	40 07.8 +41.0	119.1	39 38.3 +41.9	119.8	39 08.1 +42.8	120.5	38 37.3 +43.6	121.2	39 20.9 +43.2	120.3	38 44.4 +44.4	120.8	39 12.1 +43.7	120.6	38 28.4 +44.0	117.7	39 44.4 +44.4	120.8	39 00.0 +44.8	0.0	3
4	42 36.1 +36.7	114.9	42 10.4 +37.7	115.8	41 43.9 +38.7	116.6	41 16.7 +39.7	117.3	40 48.8 +40.6	118.1	40 20.2 +41.5	118.9	39 50.9 +42.3	119.6	38 20.9 +43.2	120.3	39 20.9 +43.2	120.3	38 44.4 +44.4	120.8	39 12.1 +43.7	120.6	38 28.4 +44.0	117.7	39 44.4 +44.4	120.8	39 00.0 +44.8	0.0	4
5	43 12.8 +36.0	113.8	42 48.1 +37.1	114.7	42 22.6 +38.2	115.5	41 56.4 +39.1	116.3	41 29.4 +40.1	117.1	41 01.7 +40.8	117.9	40 33.2 +41.9	118.7	40 04.1 +42.7	119.4	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	5		
6	43 48.8 +35.5	112.7	43 25.2 +36.5	113.6	43 00.8 +37.5	114.5	42 35.5 +38.6	115.3	42 09.5 +39.5	116.1	41 42.6 +40.5	116.9	41 15.1 +41.4	117.7	40 46.8 +42.3	118.5	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	6		
7	44 24.3 +34.7	111.6	44 01.7 +35.9	112.5	43 38.3 +36.9	113.4	43 14.1 +37.9	114.3	42 49.0 +39.0	115.1	42 23.1 +40.0	116.0	41 56.5 +40.9	116.8	41 29.1 +41.8	117.6	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	7		
8	44 59.0 +34.1	110.5	44 37.6 +35.2	111.4	44 15.2 +36.3	112.3	43 52.0 +37.4	113.2	43 28.0 +38.4	114.1	43 03.1 +39.4	114.9	42 37.4 +40.3	115.8	42 10.9 +41.3	116.6	47 32.1 +38.4	111.4	47 32.1 +38.4	111.4	47 32.1 +38.4	111.4	47 32.1 +38.4	111.4	47 32.1 +38.4	111.4	8		
9	45 33.1 +33.3	109.3	45 12.8 +34.4	110.3	44 51.5 +35.6	111.2	44 29.4 +36.7	112.1	44 06.4 +37.7	113.0	43 42.5 +38.4	113.9	43 17.7 +39.9	114.8	42 52.2 +40.8	115.6	42 52.2 +40.8	115.6	42 52.2 +40.8	115.6	42 52.2 +40.8	115.6	42 52.2 +40.8	115.6	42 52.2 +40.8	115.6	9		
10	46 06.4 +32.5	108.1	45 47.2 +33.8	109.1	45 27.1 +35.0	110.1	45 06.1 +36.1	111.0	44 44.1 +37.2	111.9	44 21.3 +38.2	112.8	43 57.6 +39.2	113.7	43 33.0 +40.3	114.6	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	10		
11	46 38.9 +31.8	106.9	46 21.0 +33.0	107.9	46 02.1 +34.2	108.9	45 42.2 +35.3	109.9	45 21.3 +36.5	110.8	44 59.5 +37.6	111.8	44 36.8 +38.7	112.7	44 13.3 +39.7	113.6	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	11		
12	47 10.7 +31.0	105.7	46 54.0 +32.2	106.7	46 36.3 +33.4	107.7	46 17.5 +34.7	108.7	45 57.8 +35.8	109.7	45 37.1 +37.0	110.6	45 15.5 +38.0	111.6	44 53.0 +39.1	112.5	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	47 37.1 +37.0	109.7	12		
13	47 41.7 +30.0	104.4	47 26.2 +31.4	105.4	47 09.7 +32.7	106.5	46 52.2 +33.8	107.5	46 33.6 +35.1	108.5	46 14.1 +36.2	109.5	45 53.5 +37.4	110.5	45 32.1 +38.4	111.4	46 10.5 +37.9	110.3	46 10.5 +37.9	110.3	46 10.5 +37.9	110.3	46 10.5 +37.9	110.3	46 10.5 +37.9	110.3	13		
14	48 11.7 +29.2	103.1	47 57.6 +30.5	104.2	47 42.4 +31.8	105.2	47 26.0 +33.2	106.3	47 08.7 +34.3	107.3	46 50.3 +35.5	108.4	46 30.9 +36.7	109.4	46 10.5 +37.9	110.3	46 10.5 +37.9	110.3	46 10.5 +37.9	110.3	46 10.5 +37.9	110.3	46 10.5 +37.9	110.3	46 10.5 +37.9	110.3	14		
15	48 40.9 +28.3	101.8	48 28.1 +29.7	102.9	48 14.2 +31.0	104.0	47 59.2 +32.2	105.1	47 43.0 +33.6	106.1	47 25.8 +34.8	107.2	47 07.6 +36.0	108.2	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	46 48.4 +37.1	109.2	15		
16	49 09.2 +27.4	100.4	48 57.8 +28.7	101.6	48 45.2 +30.1	102.7	48 31.4 +31.5	103.8	48 16.6 +32.7	104.9	48 00.6 +34.0	106.0	47 43.6 +35.2	107.0	47 25.5 +36.4	108.1	47 25.5 +36.4	108.1	47 25.5 +36.4	108.1	47 25.5 +36.4	108.1	47 25.5 +36.4	108.1	47 25.5 +36.4	108.1	16		
17	49 36.6 +26.3	99.1	49 26.5 +27.8	100.2	49 15.3 +29.2	101.4	49 02.9 +30.5	102.5	48 49.3 +31.9	103.6	48 34.6 +33.2	104.7	48 18.8 +34.5	105.8	48 01.9 +35.7	106.9	48 37.6 +34.9	105.7	48 37.6 +34.9	105.7	48 37.6 +34.9	105.7	48 37.6 +34.9	105.7	48 37.6 +34.9	105.7	17		
18	50 02.9 +25.4	97.7	49 54.3 +26.8	98.9	49 44.5 +28.2	100.0	49 33.4 +29.7	101.2	49 21.2 +31.0	102.3	49 07.8 +32.4	103.5	48 53.3 +33.6	104.6	48 37.6 +34.9	105.7	48 37.6 +34.9	105.7	48 37.6 +34.9	105.7	48 37.6 +34.9	105.7	48 37.6 +34.9	105.7	48 37.6 +34.9	105.7	18		
19	50 28.3 +24.2	96.3	50 21.1 +25.8	97.5	50 12.7 +27.2	98.7	50 03.1 +28.6	99.8	49 52.2 +30.1	101.0	49 40.2 +31.4	102.2	49 26.9 +32.8	103.3	49 12.5 +34.1	104.4	49 12.5 +34.1	104.4	49 12.5 +34.1	104.4	49 12.5 +34.1	104.4	49 12.5 +34.1	104.4	49 12.5 +34.1	104.4	19		
20	50 52.5 +23.2	94.8	50 46.9 +24.7	96.0	50 39.9 +26.2	97.3	50 31.7 +27.7	98.5	50 22.3 +29.1	99.7	50 11.6 +30.5	100.8	49 59.7 +31.9	102.0	49 46.6 +33.3	103.2	49 46.6 +33.3	103.2	49 46.6 +33.3	103.2	49 46.6 +33.3	103.2	49 46.6 +33.3	103.2	49 46.6 +33.3	103.2	20		
21	51 15.7 +22.1	93.3	51 11.6 +23.6	94.6	51 06.1 +25.2	95.8	50 59.4 +26.7	97.1	50 51.4 +28.1	98.3	50 42.1 +29.6	99.9	50 31.6 +31.0	100.7	50 19.9 +32.4	101.9	50 19.9 +32.4	101.9	50 19.9 +32.4	101.9	50 19.9 +32.4	101.9	50 19.9 +32.4	101.9	50 19.9 +32.4	101.9	21		
22	51 37.8 +20.9	91.9	51 35.2 +22.5	93.1	51 31.3 +24.1	94.4	51 26.1 +25.6	95.6	51 19.5 +27.1	96.9	51 11.7 +28.6	98.1	51 02.6 +30.1	99.3	50 52.3 +31.4	100.5	50 52.3 +31.4	100.5	50 52.3 +31.4	100.5	50 52.3 +31.4	100.5	50 52.3 +31.4	100.5	50 52.3 +31.4	100.5	22		
23	51 58.7 +19.8	90.3	51 57.7 +21.4	91.6	51 55.4 +22.9	92.9	51 51.7 +24.5	94.2	51 46.6 +26.1	95.4	51 40.3 +27.5	96.7	51 32.7 +29.0	97.9	51 23.7 +30.5	99.2	51 23.7 +30.5	99.2	51 23.7 +30.5	99.2	51 23.7 +30.5	99.2	51 23.7 +30.5	99.2	51 23.7 +30.5	99.2	23		
24	52 18.5 +18.5	88.8	52 39.2 +18.9	88.5	52 40.0 +20.6	89.9	52 39.5 +22.2	91.2	52 37.6 +23.8	92.5	52 34.3 +25.4	93.8	52 29.7 +26.9	95.1	52 23.7 +28.4	96.4	52 23.7 +28.4	96.4	52 23.7 +28.4	96.4	52 23.7 +28.4	96.4	52 23.7 +28.4	96.4	52 23.7 +28.4	96.4	24		
25	52 37.0 +17.3	87.2	52 39.2 +18.9	87.5	52 40.0 +20.6	88.8	52 37.8 +22.6	90.4	52 35.8 +24.2	91.7	52 33.8 +25.7	93.0	52 30.6 +27.2	94.3	52 26.3 +28.8	95.6	52 24.9 +29.7	96.9	52 24.9 +29.7	96.9	52 24.9 +29.7	96.9	52 24.9 +29.7	96.9	52 24.9 +29.7	96.9	25		
26	52 54.3 +16.0	85.7	52 58.1 +17.7	87.0	52 00.6 +19.3	88.3	53 01.7 +21.0	89.6	53 04.4 +22.6	91.0	52 59.7 +24.2	92.3	52 56.6 +25.8	93.															

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 42°, 318°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	40 03.6 -39.5	119.0	39 34.1 -40.3	119.8	39 04.0 -41.2	120.5	38 33.2 -42.0	121.2	38 01.9 -42.8	121.8	37 29.9 -43.5	122.5	36 57.4 -44.3	123.1	36 24.4 -45.1	123.8	36 24.4 -45.1	123.8	36 24.4 -45.1	123.8	36 24.4 -45.1	123.8	36 24.4 -45.1	123.8	0
1	39 24.1 -39.9	120.0	38 53.8 -40.8	120.7	38 22.8 -41.6	121.4	37 51.2 -42.4	122.1	37 19.1 -43.2	122.7	36 46.4 -44.0	123.4	36 13.1 -44.6	124.0	35 39.3 -45.3	124.6	35 39.3 -45.3	124.6	35 39.3 -45.3	124.6	35 39.3 -45.3	124.6	35 39.3 -45.3	124.6	1
2	38 44.2 -40.4	121.0	38 13.0 -41.2	121.7	37 41.2 -42.0	122.3	37 08.8 -42.8	123.0	36 35.9 -43.5	123.6	36 02.4 -44.2	124.2	35 28.5 -45.0	124.8	34 54.0 -45.7	125.4	34 54.0 -45.7	125.4	34 54.0 -45.7	125.4	34 54.0 -45.7	125.4	34 54.0 -45.7	125.4	2
3	38 03.8 -40.8	121.9	37 31.8 -41.7	122.6	36 59.2 -42.4	123.2	36 26.0 -43.1	123.8	35 52.4 -44.0	124.4	35 18.2 -44.7	125.0	34 43.5 -45.3	125.6	34 08.3 -46.0	126.2	34 08.3 -46.0	126.2	34 08.3 -46.0	126.2	34 08.3 -46.0	126.2	34 08.3 -46.0	126.2	3
4	37 23.0 -41.3	122.9	36 50.1 -42.0	123.5	36 16.8 -42.8	124.1	35 42.9 -43.6	124.7	35 08.4 -44.2	125.3	34 33.5 -44.9	125.9	33 58.2 -45.6	126.4	33 22.3 -46.2	126.9	33 22.3 -46.2	126.9	33 22.3 -46.2	126.9	33 22.3 -46.2	126.9	33 22.3 -46.2	126.9	4
5	36 41.7 -41.7	123.8	36 08.1 -42.4	124.4	35 34.0 -43.2	125.0	34 59.3 -43.9	125.5	34 24.2 -44.6	126.1	33 48.6 -45.2	126.7	33 12.6 -45.8	127.2	32 36.1 -46.5	127.7	32 36.1 -46.5	127.7	32 36.1 -46.5	127.7	32 36.1 -46.5	127.7	32 36.1 -46.5	127.7	5
6	36 00.0 -42.0	124.7	35 25.7 -42.8	125.2	34 50.8 -43.5	125.8	34 15.4 -44.2	126.4	33 39.6 -44.9	126.9	33 03.4 -45.6	127.4	32 26.7 -46.2	127.9	31 49.6 -46.8	128.4	31 49.6 -46.8	128.4	31 49.6 -46.8	128.4	31 49.6 -46.8	128.4	31 49.6 -46.8	128.4	6
7	35 18.0 -42.5	125.5	34 42.9 -43.2	126.1	34 07.3 -43.9	126.7	33 31.2 -44.5	127.2	32 54.7 -45.1	127.7	32 17.8 -45.8	128.2	31 40.5 -46.4	128.7	31 02.8 -47.0	129.2	31 02.8 -47.0	129.2	31 02.8 -47.0	129.2	31 02.8 -47.0	129.2	31 02.8 -47.0	129.2	7
8	34 35.5 -42.8	126.4	33 59.7 -43.5	126.9	33 23.4 -44.2	127.5	32 46.7 -44.8	128.0	32 09.6 -45.5	128.5	31 32.0 -46.1	129.0	30 54.1 -46.7	129.4	30 15.8 -47.3	129.9	30 15.8 -47.3	129.9	30 15.8 -47.3	129.9	30 15.8 -47.3	129.9	30 15.8 -47.3	129.9	8
9	33 52.7 -43.1	127.2	33 16.2 -43.8	127.8	32 39.2 -44.4	128.3	32 01.9 -45.1	128.8	31 24.1 -45.7	129.3	30 45.9 -46.3	129.7	30 07.4 -46.8	130.2	29 28.5 -47.4	130.6	29 28.5 -47.4	130.6	29 28.5 -47.4	130.6	29 28.5 -47.4	130.6	29 28.5 -47.4	130.6	9
10	33 09.6 -43.5	128.1	32 32.4 -44.1	128.6	31 54.8 -44.8	129.1	31 16.8 -45.4	129.6	30 38.4 -46.0	130.0	29 59.6 -46.6	130.5	29 20.5 -47.1	130.9	28 41.1 -47.7	131.3	28 41.1 -47.7	131.3	28 41.1 -47.7	131.3	28 41.1 -47.7	131.3	28 41.1 -47.7	131.3	10
11	32 26.1 -43.7	128.9	31 48.3 -44.5	129.4	31 10.0 -45.0	129.9	30 31.4 -45.7	130.3	29 52.4 -46.3	130.8	29 13.0 -46.8	131.2	28 33.4 -47.4	131.6	27 53.4 -47.9	132.0	27 53.4 -47.9	132.0	27 53.4 -47.9	132.0	27 53.4 -47.9	132.0	27 53.4 -47.9	132.0	11
12	31 42.4 -44.1	129.7	31 03.8 -44.7	130.2	30 25.0 -45.4	130.6	29 45.7 -45.9	131.1	29 06.1 -46.4	131.5	28 26.2 -47.0	131.9	27 46.0 -47.6	132.3	27 05.5 -48.1	132.7	27 05.5 -48.1	132.7	27 05.5 -48.1	132.7	27 05.5 -48.1	132.7	27 05.5 -48.1	132.7	12
13	30 58.3 -44.4	130.5	30 19.1 -44.9	130.9	29 39.6 -45.5	131.4	28 59.8 -46.1	131.8	28 19.7 -46.7	132.2	27 39.2 -47.2	132.6	26 58.4 -47.7	133.0	26 17.4 -48.3	133.3	26 17.4 -48.3	133.3	26 17.4 -48.3	133.3	26 17.4 -48.3	133.3	26 17.4 -48.3	133.3	13
14	30 13.9 -44.6	131.3	29 34.2 -45.3	131.7	28 54.1 -45.8	132.1	28 13.7 -46.4	132.5	27 33.0 -46.9	132.9	26 52.0 -47.5	133.3	26 10.7 -48.0	133.7	25 29.1 -48.4	134.0	25 29.1 -48.4	134.0	25 29.1 -48.4	134.0	25 29.1 -48.4	134.0	25 29.1 -48.4	134.0	14
15	29 29.3 -44.9	132.1	28 48.9 -45.4	132.5	28 08.3 -46.1	132.9	27 27.3 -46.6	133.3	26 46.1 -47.2	133.6	26 04.5 -47.6	134.0	25 22.7 -48.1	134.3	24 40.7 -48.6	134.7	24 40.7 -48.6	134.7	24 40.7 -48.6	134.7	24 40.7 -48.6	134.7	24 40.7 -48.6	134.7	15
16	28 44.4 -45.2	132.8	28 03.5 -45.8	133.2	27 22.2 -46.2	133.6	26 40.7 -46.8	134.0	25 58.9 -47.3	134.3	25 16.9 -47.8	134.7	24 34.6 -48.3	135.0	23 52.1 -48.8	135.3	23 52.1 -48.8	135.3	23 52.1 -48.8	135.3	23 52.1 -48.8	135.3	23 52.1 -48.8	135.3	16
17	27 59.2 -45.4	133.6	27 17.7 -45.9	133.9	26 36.0 -46.5	134.3	25 53.9 -47.0	134.7	25 11.6 -47.5	135.0	24 29.1 -48.0	135.3	23 46.3 -48.4	135.6	23 03.3 -48.9	135.9	23 03.3 -48.9	135.9	23 03.3 -48.9	135.9	23 03.3 -48.9	135.9	17		
18	27 13.8 -45.6	134.3	26 31.8 -46.2	134.7	25 49.5 -46.7	135.0	25 06.9 -47.1	135.3	24 24.1 -47.6	135.7	23 41.1 -48.1	136.0	22 57.9 -48.7	136.3	22 14.4 -49.1	136.6	22 14.4 -49.1	136.6	22 14.4 -49.1	136.6	22 14.4 -49.1	136.6	22 14.4 -49.1	136.6	18
19	26 28.2 -45.8	135.0	25 45.6 -46.3	135.4	25 02.8 -46.8	135.7	24 19.8 -47.4	136.0	23 36.5 -47.9	136.3	22 09.2 -48.7	136.6	21 53.5 -49.3	137.0	21 25.3 -49.2	137.2	21 25.3 -49.2	137.2	21 25.3 -49.2	137.2	21 25.3 -49.2	137.2	21 25.3 -49.2	137.2	19
20	25 42.4 -46.1	135.7	24 59.3 -46.6	136.1	24 16.0 -47.1	136.4	23 32.4 -47.5	136.7	22 48.6 -48.0	137.0	22 04.7 -48.5	137.3	21 20.5 -48.9	137.5	20 36.1 -49.3	137.8	20 36.1 -49.3	137.8	20 36.1 -49.3	137.8	20 36.1 -49.3	137.8	20 36.1 -49.3	137.8	20
21	24 56.3 -46.2	136.5	24 12.7 -46.7	136.8	23 28.9 -47.2	137.1	22 44.9 -47.7	137.4	22 00.6 -48.1	137.6	21 16.2 -48.6	137.9	20 31.6 -49.0	138.2	19 46.8 -49.4	138.4	19 46.8 -49.4	138.4	19 46.8 -49.4	138.4	19 46.8 -49.4	138.4	19 46.8 -49.4	138.4	21
22	24 10.1 -46.4	137.2	23 26.0 -46.9	137.5	22 41.7 -47.4	137.7	21 57.2 -47.9	138.0	21 12.5 -48.3	138.3	20 27.6 -48.7	138.5	19 42.6 -49.2	138.8	18 57.4 -49.6	139.0	18 57.4 -49.6	139.0	18 57.4 -49.6	139.0	18 57.4 -49.6	139.0	18 57.4 -49.6	139.0	22
23	23 23.7 -46.7	137.8	22 39.1 -47.1	138.1	21 54.3 -47.6	138.4	21 09.3 -48.0	138.7	20 24.2 -48.4	138.9	19 38.9 -48.9	139.2	18 53.4 -49.2	139.4	18 07.8 -49.7	139.6	18 07.8 -49.7	139.6	18 07.8 -49.7	139.6	18 07.8 -49.7	139.6	18 07.8 -49.7	139.6	23
24	22 37.0 -46.8	138.5	21 56.0 -47.3	138.8	21 06.7 -47.7	139.1	20 21.3 -48.1	139.3	19 35.8 -48.6	139.5	18 50.0 -48.9	139.8	18 04.2 -49.4	140.0	17 18.1 -49.7	140.2	17 18.1 -49.7	140.2	17 18.1 -49.7	140.2	17 18.1 -49.7	140.2	17 18.1 -49.7	140.2	17
25	21 50.2 -46.9	139.2	21 04.7 -47.4	139.5	20 19.0 -47.8	139.7	19 33.2 -48.3	139.9	18 47.2 -48.7	140.2	18 01.1 -49.1	140.4	17 14.8 -49.5	140.6	16 28.4 -49.9	140.8	16 28.4 -49.9	140.8	16 28.4 -49.9	140.8	16 28.4 -49.9	140.8	16 28.4 -49.9	140.8	25
26	20 54.6 -47.2	139.8	19 18.3 -48.6	140.3	19 31.9 -48.7	140.6	18 44.9 -49.2	140.8	17 55.9 -49.5	141.0	17 06.4 -49.6	141.2	16 25.3 -49.6	141.4	15 38.5 -50.0	141.6	15 38.5 -50.0	141.6	15 38.5 -50.0	141.6	15 38.5 -50.0	141.6	15 38.5 -50.0	141.6	30
27	19 54.6 -48.2	140.5	18 03.1 -48.6	140.9	18 31.4 -48.9	140.8	17 09.8 -49.3	141.2	16 50.7 -49.5	141.4	16 05.4 -49.5	141.6	15 34.6 -50.0	141.8	14 06.4 -50.3	142.0	14 06.4 -50.3	142.0	14 06.4 -50.3	142.0	14 06.4 -50.3	142.0	14 06.4 -50.3	142.0	30
28	18 58.8 -48.4	141.2	17 23.9 -49.0	141.5	17 37.7 -49.2	141.7	16 37.7 -49.5	142.0	15 29.8 -49.6	142.1	15 07.1 -49.7	142.4	14 50.5 -50.0	142.6	13 04.0 -50.5	142.8									

43°, 317° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	39 18.0 +38.5	118.2	38 49.3 +39.4	118.9	38 19.9 +40.4	119.6	37 50.0 +41.2	120.3	37 19.4 +42.0	120.9	36 48.3 +42.8	121.6	36 16.6 +43.5	122.2	35 44.3 +44.3	122.8	35 44.3 +44.3	122.8	35 44.3 +44.3	122.8	35 44.3 +44.3	122.8	35 44.3 +44.3	122.8	0
1	39 56.5 +38.0	117.2	39 28.7 +38.9	117.9	39 00.3 +39.8	118.7	38 31.2 +40.7	119.4	38 01.4 +41.6	120.0	37 31.1 +42.4	120.7	37 00.1 +43.2	121.4	36 28.6 +44.0	122.0	36 28.6 +44.0	122.0	36 28.6 +44.0	122.0	36 28.6 +44.0	122.0	36 28.6 +44.0	122.0	1
2	40 34.5 +37.4	116.2	40 07.6 +38.4	116.9	39 40.1 +39.3	117.7	39 11.9 +40.2	118.4	38 43.0 +41.1	119.1	38 13.5 +41.9	119.8	37 43.3 +42.8	120.5	37 12.6 +43.6	121.2	37 12.6 +43.6	121.2	37 12.6 +43.6	121.2	37 12.6 +43.6	121.2	37 12.6 +43.6	121.2	2
3	41 11.9 +36.3	115.2	40 46.0 +37.9	115.9	40 19.4 +38.9	116.7	39 52.1 +39.8	117.5	39 24.1 +40.7	118.2	38 55.4 +41.6	118.9	38 26.1 +42.4	119.6	37 56.2 +43.2	120.3	37 56.2 +43.2	120.3	37 56.2 +43.2	120.3	37 56.2 +43.2	120.3	37 56.2 +43.2	120.3	3
4	41 48.8 +36.3	114.1	41 23.9 +37.3	114.9	40 58.3 +38.3	115.7	40 31.9 +39.2	116.5	40 04.8 +40.2	117.2	39 37.0 +41.0	118.0	39 08.5 +41.9	118.7	38 39.4 +42.7	119.4	38 39.4 +42.7	119.4	38 39.4 +42.7	119.4	38 39.4 +42.7	119.4	38 39.4 +42.7	119.4	4
5	42 25.1 +35.7	113.0	42 01.2 +36.8	113.9	41 36.6 +37.7	114.7	41 11.1 +38.8	115.5	40 45.0 +39.6	116.3	40 18.0 +40.7	117.0	39 50.4 +41.5	117.8	39 22.1 +42.4	118.5	39 22.1 +42.4	118.5	39 22.1 +42.4	118.5	39 22.1 +42.4	118.5	39 22.1 +42.4	118.5	5
6	43 00.8 +35.0	111.9	42 38.0 +36.1	112.8	42 14.3 +37.2	113.6	41 49.9 +38.1	114.5	41 24.6 +39.2	115.3	40 58.7 +40.1	116.1	40 31.9 +41.1	116.8	40 04.5 +41.9	117.6	40 04.5 +41.9	117.6	40 04.5 +41.9	117.6	40 04.5 +41.9	117.6	40 04.5 +41.9	117.6	6
7	43 35.8 +34.4	110.8	43 14.1 +35.5	111.7	42 51.5 +36.5	112.6	42 28.0 +37.6	113.4	42 03.8 +38.6	114.2	41 38.8 +39.5	115.1	41 13.0 +40.5	115.9	40 46.4 +41.5	116.6	40 46.4 +41.5	116.6	40 46.4 +41.5	116.6	40 46.4 +41.5	116.6	40 46.4 +41.5	116.6	7
8	44 10.2 +33.7	109.7	43 49.6 +34.8	110.6	43 28.0 +36.0	111.5	43 05.6 +37.0	112.4	42 42.4 +38.0	113.2	42 18.3 +39.1	114.1	41 53.5 +40.0	114.9	41 27.9 +40.9	115.7	41 27.9 +40.9	115.7	41 27.9 +40.9	115.7	41 27.9 +40.9	115.7	41 27.9 +40.9	115.7	8
9	44 43.9 +33.0	108.5	44 24.4 +34.1	109.5	44 04.0 +35.2	110.4	43 42.6 +36.4	111.3	43 20.4 +37.5	112.2	42 57.4 +38.5	113.0	42 33.5 +39.5	113.9	42 08.8 +40.5	114.7	42 08.8 +40.5	114.7	42 08.8 +40.5	114.7	42 08.8 +40.5	114.7	42 08.8 +40.5	114.7	9
10	45 16.9 +32.2	107.3	44 58.5 +33.5	108.3	44 39.2 +34.6	109.2	44 19.0 +35.7	110.2	43 57.9 +36.8	111.1	43 35.9 +37.8	112.0	43 13.0 +38.9	112.8	42 49.3 +39.9	113.7	42 49.3 +39.9	113.7	42 49.3 +39.9	113.7	42 49.3 +39.9	113.7	42 49.3 +39.9	113.7	10
11	45 49.1 +31.5	106.1	45 32.0 +32.6	107.1	45 13.8 +33.9	108.1	44 54.7 +35.0	109.0	44 34.7 +36.1	110.0	44 13.7 +37.3	110.9	43 51.9 +38.3	111.8	43 29.2 +39.4	112.7	43 29.2 +39.4	112.7	43 29.2 +39.4	112.7	43 29.2 +39.4	112.7	43 29.2 +39.4	112.7	11
12	46 20.6 +30.6	104.9	46 04.6 +31.9	105.9	45 47.7 +33.1	106.9	45 29.7 +34.4	107.9	45 10.8 +35.5	108.8	44 51.0 +36.6	109.8	44 30.2 +37.7	110.7	44 08.6 +38.7	111.6	44 08.6 +38.7	111.6	44 08.6 +38.7	111.6	44 08.6 +38.7	111.6	44 08.6 +38.7	111.6	12
13	46 51.2 +29.9	103.7	46 36.5 +31.2	104.7	46 20.8 +32.4	105.7	46 04.1 +33.6	106.7	45 46.3 +34.8	107.7	45 27.6 +35.9	108.7	45 07.9 +37.1	109.6	44 47.3 +38.2	110.6	44 47.3 +38.2	110.6	44 47.3 +38.2	110.6	44 47.3 +38.2	110.6	44 47.3 +38.2	110.6	13
14	47 21.1 +28.1	102.4	47 07.7 +30.2	103.4	46 53.2 +31.5	104.5	46 37.7 +32.8	105.5	46 21.1 +34.0	106.5	46 03.5 +35.3	107.5	45 45.0 +36.4	108.5	45 25.5 +37.5	109.5	45 25.5 +37.5	109.5	45 25.5 +37.5	109.5	45 25.5 +37.5	109.5	45 25.5 +37.5	109.5	14
15	47 50.0 +28.1	101.1	47 37.9 +29.4	102.2	47 24.7 +30.8	103.2	47 10.5 +32.0	104.3	46 55.1 +33.3	105.3	46 38.8 +34.5	106.3	46 21.4 +35.7	107.4	46 03.0 +36.8	108.3	46 03.0 +36.8	108.3	46 03.0 +36.8	108.3	46 03.0 +36.8	108.3	46 03.0 +36.8	108.3	15
16	48 18.1 +27.1	99.8	48 07.3 +28.6	100.9	47 55.5 +29.8	102.0	47 42.5 +31.2	103.0	47 28.4 +32.5	104.1	47 13.3 +33.7	105.1	46 57.1 +34.9	106.2	46 39.8 +36.2	107.2	46 39.8 +36.2	107.2	46 39.8 +36.2	107.2	46 39.8 +36.2	107.2	46 39.8 +36.2	107.2	16
17	48 45.2 +26.2	98.4	48 35.9 +27.5	99.5	48 25.3 +29.0	100.7	48 13.7 +30.3	101.8	48 00.9 +31.6	102.8	47 47.0 +32.9	103.9	47 32.0 +34.2	105.0	47 16.0 +35.4	106.0	47 16.0 +35.4	106.0	47 16.0 +35.4	106.0	47 16.0 +35.4	106.0	47 16.0 +35.4	106.0	17
18	49 11.4 +25.2	97.0	49 03.4 +26.7	98.2	48 54.3 +28.0	99.3	48 44.0 +29.4	100.5	48 32.5 +30.8	101.6	48 19.9 +32.1	102.7	48 06.2 +33.4	103.8	47 51.4 +34.7	104.8	47 51.4 +34.7	104.8	47 51.4 +34.7	104.8	47 51.4 +34.7	104.8	47 51.4 +34.7	104.8	18
19	49 36.6 +24.1	95.7	49 30.1 +25.6	96.8	49 22.3 +27.1	98.0	49 13.4 +28.5	99.1	49 03.9 +29.9	100.3	48 52.0 +31.3	101.4	48 39.6 +32.6	102.5	48 26.1 +33.8	103.6	48 26.1 +33.8	103.6	48 26.1 +33.8	103.6	48 26.1 +33.8	103.6	48 26.1 +33.8	103.6	19
20	50 00.7 +23.2	94.2	50 55.7 +24.6	95.4	49 49.4 +26.1	96.6	49 41.9 +27.5	97.8	49 33.2 +28.9	98.9	49 23.3 +30.3	100.1	49 12.2 +31.7	101.2	48 59.9 +33.0	102.4	48 59.9 +33.0	102.4	48 59.9 +33.0	102.4	48 59.9 +33.0	102.4	48 59.9 +33.0	102.4	20
21	50 23.9 +22.0	92.8	50 20.3 +23.6	94.0	50 15.5 +25.0	95.2	50 09.4 +26.6	96.4	50 02.1 +28.0	97.6	49 53.6 +29.4	98.8	49 43.9 +30.8	99.9	49 32.9 +32.2	101.1	49 32.9 +32.2	101.1	49 32.9 +32.2	101.1	49 32.9 +32.2	101.1	49 32.9 +32.2	101.1	21
22	50 45.9 +20.9	91.3	50 43.9 +22.4	92.5	50 40.5 +24.0	93.8	50 36.0 +25.5	95.0	50 30.1 +27.0	96.2	50 23.0 +28.5	97.4	50 14.7 +29.8	98.6	50 05.1 +31.3	99.8	50 05.1 +31.3	99.8	50 05.1 +31.3	99.8	50 05.1 +31.3	99.8	50 05.1 +31.3	99.8	22
23	51 06.8 +19.7	89.8	51 06.3 +21.3	91.1	51 04.5 +22.9	92.3	51 01.5 +24.4	93.6	50 57.1 +25.9	94.8	50 51.5 +27.4	96.0	50 44.5 +28.9	97.2	50 36.4 +30.3	98.4	50 36.4 +30.3	98.4	50 36.4 +30.3	98.4	50 36.4 +30.3	98.4	50 36.4 +30.3	98.4	23
24	51 26.5 +18.6	88.3	52 21.6 +19.0	89.5	52 17.4 +20.2	90.7	52 14.2 +21.8	91.9	52 11.1 +22.6	93.0	52 10.6 +23.7	94.2	52 9.1 +24.7	95.4	52 8.6 +25.6	96.6	52 3.1 +26.2	97.8	52 3.1 +26.2	97.8	52 3.1 +26.2	97.8	52 3.1 +26.2	97.8	24
25	51 45.1 +17.4	86.8	51 47.8 +19.0	88.1	51 49.2 +20.6	89.3	51 49.2 +22.2	90.6	51 47.9 +23.7	91.9	51 45.3 +25.3	93.1	51 41.3 +26.8	94.4	51 36.0 +28.4	95.7	51 36.0 +28.4	95.7	51 36.0 +28.4	95.7	51 36.0 +28.4	95.7	51 36.0 +28.4	95.7	25
26	52 02.5 +16.1	85.2	52 06.8 +17.8	86.5	52 09.8 +19.3	87.8	52 11.4 +21.0	89.1	52 11.6 +22.6	90.4	52 10.6 +24.1	91.7	52 08.1 +25.8	93.0	52 04.4 +27.2	94.2	52 04.4 +27.2	94.2	52 04.4 +27.2	94.2	52 04.4 +27.2	94.2	52 04.4 +27.2	94.2	26
27	52 18.6 +14.9	83.7	52 24.6 +16.5	85.0	52 29.1 +18.2	86.3	52 32.4 +19.8	87.6	52 34.2 +21.5	88.9	52 34.7 +23.1	90.2	52 33.9 +24.6	91.5	52 33.9 +24.6	91.5	52 33.9 +24.6	91.5	52 33.9 +24.6	91.5	52 33.9 +24.6	91.5	52 33.9 +24.6	91.5	27
28	52 33.5 +13.6	82.1	52 41.1 +15.2	83.4	52 47.3 +16.8	84.7	52 52.2 +18.5	86.0	52 55.7 +20.1	87.3	52 57.8 +21.8	88.7	52 58.5 +23.4	90.0	52 57.8 +23.4	90.0	52 57.8 +23.4	9							

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 43°, 317°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	39	18.0	-39.1	118.2	38	49.3	-39.9	118.9	38	19.9	-40.7	119.6	37	50.0	-41.6	120.3	37	19.4	-42.4	120.9	36	48.3	-43.2	121.6	36	16.6	-44.0	122.2	35	44.3	-44.7	122.8	0
1	38	38.9	-39.5	119.2	38	09.4	-40.4	119.9	37	39.2	-41.2	120.5	37	08.4	-42.0	121.2	36	37.0	-42.7	121.8	36	05.1	-43.5	122.5	35	32.6	-44.2	123.1	34	59.6	-44.9	123.7	1
2	37	59.4	-39.9	120.1	37	29.0	-40.8	120.8	36	58.0	-41.6	121.5	36	26.4	-42.4	122.1	35	54.3	-43.2	122.7	35	21.6	-43.9	123.3	34	48.4	-44.6	123.9	34	14.7	-45.3	124.5	2
3	37	19.5	-40.4	121.1	36	48.2	-41.2	121.7	36	16.4	-42.0	122.4	35	44.0	-42.7	123.0	35	11.1	-43.5	123.6	34	37.7	-44.2	124.1	34	03.8	-44.9	124.7	33	29.4	-45.6	125.3	3
4	36	39.1	-40.8	122.0	36	07.0	-41.6	122.6	35	34.4	-42.4	123.2	35	01.3	-43.1	123.8	34	27.6	-43.8	124.4	33	53.5	-44.6	125.0	33	18.9	-45.2	125.5	32	43.8	-45.9	126.0	4
5	35	58.3	-41.2	122.9	35	25.4	-42.0	123.5	34	52.0	-42.7	124.1	34	18.2	-43.5	124.7	33	43.8	-44.2	125.2	33	08.9	-44.8	125.8	32	33.7	-45.2	126.3	31	57.9	-46.1	126.8	5
6	35	17.1	-41.6	123.8	34	43.4	-42.3	124.4	34	09.3	-43.1	125.0	33	34.7	-43.8	125.5	32	59.6	-44.4	126.0	32	24.1	-45.1	126.6	31	48.2	-45.8	127.1	31	11.8	-46.4	127.5	6
7	34	35.5	-42.0	124.7	34	01.1	-42.7	125.2	33	26.2	-43.4	125.8	32	50.9	-44.1	126.3	32	15.2	-44.8	126.8	31	39.0	-45.4	127.3	31	02.4	-46.0	128.7	30	25.4	-46.6	128.3	7
8	33	53.5	-42.4	125.6	33	18.4	-43.1	126.1	32	42.8	-43.7	126.6	32	06.8	-44.2	127.1	31	30.4	-45.1	127.6	30	53.6	-45.7	128.1	30	16.4	-46.3	128.6	29	38.8	-46.9	129.0	8
9	33	11.1	-42.6	126.4	32	35.3	-43.3	126.9	31	59.1	-44.1	127.4	31	22.4	-44.7	127.9	30	45.3	-45.3	128.4	30	07.9	-45.9	128.8	29	30.1	-46.5	129.3	28	51.9	-47.1	129.7	9
10	32	28.5	-43.0	127.2	31	52.0	-43.7	127.7	31	15.0	-44.3	128.2	30	37.7	-44.9	128.7	30	00.0	-45.6	129.1	29	22.0	-46.2	129.6	28	43.6	-46.4	130.0	28	04.8	-47.3	130.4	10
11	31	45.5	-43.3	128.1	31	08.3	-44.0	128.5	30	30.7	-44.6	129.0	29	52.8	-45.3	129.5	29	14.4	-45.8	129.9	28	35.8	-46.4	130.3	27	56.8	-47.0	130.7	27	17.5	-47.5	131.1	11
12	31	02.2	-43.7	128.9	30	24.3	-44.2	129.3	29	46.1	-44.9	129.8	29	07.5	-45.4	130.2	28	28.6	-46.0	130.6	27	49.4	-46.6	131.0	27	09.8	-47.1	131.4	26	30.0	-47.7	131.8	12
13	30	18.5	-43.9	129.7	29	40.1	-44.6	130.1	29	01.2	-45.1	130.5	28	22.1	-45.8	131.0	27	42.6	-46.3	131.4	27	02.8	-46.9	131.7	26	22.7	-47.4	132.1	25	42.3	-47.9	132.5	13
14	29	34.6	-44.1	130.5	28	55.5	-44.8	130.9	28	16.1	-45.4	131.3	27	36.3	-45.9	131.7	26	56.3	-46.5	132.1	26	15.9	-47.0	132.4	25	35.3	-47.5	132.8	24	54.4	-48.1	133.1	14
15	28	50.5	-44.5	131.2	28	10.7	-45.0	131.6	27	30.7	-45.6	132.0	26	50.4	-46.2	132.4	26	09.8	-46.7	132.8	25	28.9	-47.2	133.1	24	47.8	-47.8	133.5	24	06.3	-48.2	133.8	15
16	28	06.0	-44.7	132.0	27	25.7	-45.2	132.4	26	45.1	-45.8	132.8	26	04.2	-46.3	133.1	25	23.1	-46.9	133.5	24	41.7	-47.4	133.8	24	00.0	-47.8	134.1	23	18.1	-48.4	134.5	16
17	27	21.3	-44.9	132.8	26	40.5	-45.5	133.1	25	59.3	-46.0	133.5	25	17.9	-46.6	133.8	24	36.2	-47.1	134.2	23	54.3	-47.6	134.5	23	12.1	-48.1	134.8	22	29.7	-48.5	135.1	17
18	26	36.4	-45.2	133.5	25	55.0	-45.7	133.9	25	13.3	-46.3	134.2	24	31.3	-46.7	134.5	23	49.1	-47.2	134.8	23	06.7	-47.7	135.2	22	24.0	-48.2	135.4	21	41.2	-48.7	135.7	18
19	25	51.2	-45.3	134.2	25	09.3	-45.8	134.6	24	27.0	-46.4	134.9	23	44.6	-47.0	135.2	23	01.9	-47.5	135.5	22	19.0	-47.9	135.8	21	35.8	-48.3	136.1	20	52.5	-48.8	136.4	19
20	25	05.9	-45.6	135.0	24	23.4	-46.2	135.3	23	40.6	-46.6	135.6	22	57.6	-47.1	135.9	22	14.4	-47.5	136.2	21	31.1	-48.1	136.5	20	47.5	-48.5	136.7	20	03.7	-49.0	137.0	20
21	24	20.3	-45.8	135.7	23	37.2	-46.2	136.0	22	54.0	-46.8	136.3	22	10.5	-47.2	136.6	21	26.9	-47.8	136.8	20	43.0	-48.2	137.1	19	59.0	-48.7	137.4	19	14.7	-49.0	137.6	21
22	23	34.5	-46.0	136.4	22	51.0	-46.5	136.7	22	07.2	-46.9	137.0	21	23.3	-47.5	137.2	20	39.1	-47.9	137.5	19	54.8	-48.3	137.7	19	10.3	-48.7	138.0	18	25.7	-49.2	138.2	22
23	22	48.5	-46.1	137.1	22	04.5	-46.7	137.4	21	20.3	-47.2	137.6	20	35.8	-47.5	137.9	19	51.2	-48.0	138.1	19	06.5	-48.5	138.4	18	21.6	-48.9	138.6	17	36.5	-49.3	138.8	23
24	22	02.4	-46.4	137.8	21	17.8	-46.6	138.0	20	33.1	-47.2	138.3	19	48.3	-47.7	138.5	19	03.2	-48.1	138.8	18	18.0	-48.5	139.0	17	32.7	-49.0	139.2	16				
25	21	16.0	-46.5	138.5	20	31.0	-46.9	138.7	19	45.9	-47.4	138.9	19	00.6	-47.9	139.2	18	15.1	-48.3	139.4	17	29.5	-48.7	139.6	16	43.7	-49.1	139.8	15	57.8	-49.5	140.0	25
26	20	29.5	-46.6	139.1	19	44.1	-47.1	139.4	18	58.5	-47.6	139.6	18	12.7	-47.9	139.8	17	26.8	-48.4	140.0	16	40.8	-48.8	140.2	15	54.6	-49.2	140.4	15	08.3	-49.6	140.6	26
27	19	42.9	-46.8	139.8	18	57.0	-47.2	140.0	18	10.9	-47.6	140.2	17	24.8	-48.1	140.4	16	38.4	-48.5	140.6	15	52.0	-49.4	140.8	14	18.7	-49.6	141.2	27				
28	18	56.1	-46.9	140.5	18	09.8	-47.4	140.7	17	23.3	-47.8	140.9	16	36.7	-48.2	141.1	15	49.9	-48.6	141.3	15	03.1	-49.0	141.4	14	16.1	-49.3	141.6	13	29.1	-49.8	141.7	28
29	18	09.2	-47.1	141.1	17	22.4	-47.5	141.3	16	35.5	-48.4	141.5	15	48.5	-48.7	141.7	14	50.0	-49.0	141.8	13	08.0	-49.4	141.9	12	29.6	-50.1	141.5	14				
30	9	25.6	-48.0	148.0	8	34.7	-48.4	148.1	7	43.8	-48.8	148.2	6	52.8	-49.1	148.3	5	01.7	-49.4	148.4	4	10.7	-49.7	148.4	3	28.4	-50.2	148.4	40				
31	8	37.6	-48.2	148.6	7	46.3	-48.5	148.7	6	50.5	-48.8	148.8	5	03.7	-49.1	148.8	4	12.3	-49.4	148.9	3	28.2	-50.4	149.0	41								
42	7	49.4	-48.2	149.2	6	57.8	-48.5	149.3	5	06.2	-48.8	149.4	4	14.6	-49.1	149.4	3	31.3	-49.3	149.5	2	39.6	-50.1	149.5	42								
43	7	01.2	-48.2	149.8	6	09.3	-48.5	149.9	5	17.4	-48.9	149.9	4	25.5	-49.2	150.0	3	33.5	-49.5	150.0	2	41.5	-50.0	150.1	43								
44	6																																

44°, 316° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	38 32.0 +38.1	117.4		38 04.1 +39.0	118.1		37 35.5 +39.9	118.8		37 06.3 +40.8	119.4		36 36.6 +41.6	120.1		36 06.2 +42.4	120.7		35 35.3 +43.2	121.3		35 03.8 +44.0	121.9		0
1	39 10.1 +37.6	116.4		38 43.1 +38.5	117.1		38 15.4 +39.5	117.8		37 47.1 +40.3	118.5		37 18.2 +41.1	119.2		36 48.6 +42.0	119.8		36 18.5 +42.8	120.5		35 47.8 +43.6	121.1		1
2	39 47.7 +37.0	115.4		39 21.6 +38.0	116.1		38 54.9 +38.9	116.8		38 27.4 +39.9	117.6		37 59.3 +40.8	118.3		37 30.6 +41.6	119.8		37 01.3 +42.4	119.6		36 31.4 +43.2	120.2		2
3	40 24.7 +36.5	114.3		39 59.6 +37.5	115.1		39 33.8 +38.5	115.9		39 07.3 +39.4	116.6		38 40.1 +40.3	117.3		38 12.2 +41.2	118.0		37 43.7 +42.0	118.7		37 14.6 +42.8	119.4		3
4	41 01.2 +35.9	113.3		40 37.1 +36.9	114.1		40 12.3 +37.9	114.9		39 46.7 +38.8	115.6		39 20.4 +39.8	116.4		38 53.4 +40.7	117.1		38 25.7 +41.6	117.8		37 57.4 +42.5	118.5		4
5	41 37.1 +35.4	112.2		41 14.0 +36.4	113.0		40 50.2 +37.3	113.8		40 25.5 +38.4	114.6		40 00.2 +39.3	115.4		39 34.1 +40.2	116.1		39 07.3 +41.2	116.9		38 39.9 +42.0	117.6		5
6	42 12.5 +34.6	111.1		41 50.4 +35.8	112.0		41 27.5 +36.8	112.8		41 03.9 +37.8	113.6		40 39.5 +38.8	114.4		40 14.3 +39.8	115.2		39 48.5 +40.6	115.9		39 21.9 +41.5	116.7		6
7	42 47.1 +34.1	110.0		42 26.2 +35.1	110.9		42 04.3 +36.2	111.7		41 41.7 +37.3	112.6		41 18.3 +38.2	113.4		40 54.1 +39.2	114.2		40 29.1 +40.2	115.0		40 03.4 +41.1	115.7		7
8	43 21.2 +33.3	108.9		43 01.3 +34.5	109.8		42 40.5 +35.6	110.7		42 19.0 +36.6	111.5		41 56.5 +37.7	112.4		41 33.3 +38.7	113.2		41 09.3 +39.7	114.0		40 44.5 +40.6	114.8		8
9	43 54.5 +32.7	107.8		43 35.8 +33.8	108.7		43 16.1 +35.0	109.6		42 55.6 +36.0	110.4		42 34.2 +37.1	111.3		42 12.0 +38.1	112.2		41 49.0 +39.1	113.0		41 25.1 +40.2	113.8		9
10	44 27.2 +31.5	106.6		44 09.6 +33.1	107.5		43 51.1 +34.2	108.4		43 31.6 +35.4	109.3		43 11.3 +36.5	110.2		42 50.1 +37.6	111.1		42 28.1 +38.6	112.0		42 05.3 +39.5	112.8		10
11	44 59.1 +31.2	105.4		44 42.7 +32.4	106.4		44 25.3 +33.6	107.3		44 07.0 +34.7	108.2		43 47.8 +35.9	109.1		43 27.7 +36.9	110.0		43 06.7 +38.0	110.9		42 44.8 +39.1	111.8		11
12	45 30.3 +30.4	104.2		45 15.1 +31.6	105.2		44 58.9 +32.8	106.1		44 41.7 +34.1	107.1		44 23.7 +35.1	108.0		44 04.6 +36.3	108.9		43 44.7 +37.4	109.9		43 23.9 +38.4	110.7		12
13	46 00.7 +29.5	102.9		45 46.7 +30.9	104.0		45 31.7 +32.1	104.9		45 15.8 +33.3	105.9		44 58.8 +34.5	106.9		44 40.9 +35.7	107.8		44 22.1 +36.7	108.8		44 02.3 +37.9	109.7		13
14	46 30.2 +28.5	101.7		46 17.6 +30.0	102.7		46 03.8 +31.3	103.7		45 49.1 +32.5	104.7		45 33.3 +33.8	105.7		45 16.6 +34.9	106.7		44 58.8 +36.1	107.7		44 40.2 +37.2	108.6		14
15	46 59.0 +27.8	100.4		46 47.6 +29.2	101.5		46 35.1 +30.5	102.5		46 21.6 +31.8	103.5		46 07.1 +33.0	104.5		45 51.5 +34.2	105.5		45 34.9 +35.5	106.5		45 17.4 +36.6	107.5		15
16	47 26.8 +27.0	99.1		47 16.8 +28.3	100.2		47 05.6 +29.7	101.2		46 53.4 +30.9	102.3		46 40.1 +32.2	103.3		46 25.7 +33.5	104.3		46 10.4 +34.7	105.4		45 54.0 +35.8	106.4		16
17	47 53.8 +26.0	97.8		47 45.1 +27.4	98.9		47 35.3 +28.7	100.0		47 24.3 +30.2	101.0		47 12.3 +31.4	102.1		46 59.2 +32.7	103.1		46 45.1 +33.9	104.2		46 29.8 +35.2	105.2		17
18	48 19.8 +25.0	96.4		48 12.5 +26.5	97.5		48 04.0 +27.9	98.6		47 54.5 +29.2	99.7		47 43.7 +30.6	100.8		47 31.9 +31.9	101.9		47 19.0 +33.2	103.0		47 05.0 +34.4	104.0		18
19	48 44.8 +24.1	95.1		48 39.0 +25.5	96.2		48 31.9 +26.9	97.3		48 23.7 +28.3	98.4		48 14.3 +29.7	99.5		48 03.8 +31.0	100.6		47 52.2 +32.3	101.7		47 39.4 +33.6	102.8		19
20	49 08.9 +23.0	93.7		49 04.5 +24.5	94.8		48 58.8 +26.0	96.0		48 52.0 +27.4	97.1		48 44.0 +28.8	98.2		48 34.8 +30.2	99.4		48 24.5 +31.5	100.5		48 13.0 +32.9	101.6		20
21	49 31.9 +22.0	92.2		49 29.0 +23.5	93.4		49 24.8 +25.0	94.6		49 19.4 +26.4	95.7		49 12.8 +27.8	96.9		49 05.0 +29.2	98.0		48 56.0 +30.6	99.2		48 45.9 +31.9	100.3		21
22	49 53.9 +20.9	90.8		49 52.5 +22.4	92.0		49 49.8 +23.9	93.2		49 45.8 +25.4	94.4		49 40.6 +26.9	95.5		49 34.2 +28.3	96.7		49 26.6 +29.7	97.9		49 17.8 +31.1	99.0		22
23	50 14.8 +19.8	89.3		50 14.9 +21.3	90.5		50 13.7 +22.8	91.7		50 11.2 +24.4	92.9		50 07.5 +25.9	94.1		50 02.5 +27.4	95.3		49 56.3 +28.8	96.5		49 48.9 +30.2	97.7		23
24	50 34.6 +18.6	87.9		50 36.2 +20.2	88.1		50 36.5 +21.8	90.3		50 35.6 +23.3	91.5		50 33.4 +24.8	92.7		50 29.9 +26.3	93.9		50 25.1 +27.8	95.2		50 19.1 +29.2	96.4		24
25	50 53.2 +17.5	86.4		50 56.4 +19.1	87.6		50 58.3 +20.6	88.8		50 58.9 +22.2	90.1		50 58.2 +23.7	91.3		50 56.2 +25.2	92.5		50 52.9 +26.7	93.8		50 48.3 +28.3	95.0		25
26	51 10.7 +16.3	84.8		51 15.5 +17.8	86.1		51 18.9 +19.5	87.3		51 21.1 +21.0	88.6		51 21.9 +22.6	89.8		51 21.4 +24.2	91.1		51 19.6 +25.7	92.3		51 16.6 +27.2	93.6		26
27	51 27.0 +15.0	83.3		51 33.3 +16.7	84.6		51 38.4 +18.3	85.8		51 42.1 +19.9	87.1		51 44.5 +21.5	88.3		51 45.6 +23.0	89.6		51 45.3 +24.6	90.9		51 43.8 +26.1	92.1		27
28	51 42.0 +13.8	81.7		51 50.0 +15.4	83.0		51 56.7 +17.0	84.3		52 02.0 +18.7	85.5		52 06.0 +20.3	86.8		52 08.6 +21.9	88.1		52 09.9 +23.5	89.4		52 09.9 +25.0	90.7		28
29	51 55.8 +12.6	80.2		52 05.4 +14.2	81.4		52 13.7 +15.8	82.7		52 20.7 +17.4	84.0		52 26.3 +19.0	85.5		52 30.5 +20.7	86.6		52 33.4 +22.3	87.9		52 34.9 +23.9	89.2		29
30	52 08.4 +11.2	78.6		52 19.6 +12.9	79.8		52 29.5 +14.5	81.1		52 38.1 +16.2	82.4		52 45.3 +17.8	83.7		52 51.2 +19.5	85.0		52 55.7 +21.1	86.4		52 58.8 +22.7	87.7		30
31	52 19.6 +9.5	77.0		52 32.5 +11.5	78.2		52 44.0 +13.2	79.5		52 54.3 +14.8	80.8		53 03.1 +16.6	82.1		53 10.7 +18.2	83.5		53 17.8 +19.9	84.8		53 21.5 +21.5	86.1		31
32	52 29.5 +8.6	75.4		52 44.0 +10.3	76.6		52 57.2 +11.9	77.9		53 09.1 +13.6	79.2		53 19.7 +15.2	80.5		53 28.9 +16.9	81.9		53 36.7 +18.5	83.2		53 43.0 +20.3	84.6		32
33	52 38.1 +7.2	73.7		52 54.3 +8.8	75.0		53 09.1 +10.6	76.3		53 22.7 +12.2	77.6		53 34.9 +13.9	78.9		53 45.8 +15.6	80.2		53 55.2 +17.3	81.6		54 03.3 +19.0	83.0		33
34	52 45.3 +5.9	72.1		53 03.1 +7.6	73.4		53 19.7 +9.2	74.6		53 34.9 +10.9	75.9		53 48.8 +12.6	77.3		54 01.4 +14.2	78.6		54 12.5 +15.9	80.0		54 22.3 +17.6	81.3		34
35	52 51.2 +4.5	70.4		53 10.7 +6.1	71.7		53 28.9 +7.8	73.0		53 45.8 +9.4	74.3		54 04.3 +11.1	75.6		54 15.6 +12.8	77.0		54 28.4 +14.6	78.3		54 39.9 +16.3	79.7		35
36	52 24.7 -10.5	52.3		53 01.0 -9.2	53.3		53 36.4 -7.9	54.4		54 10.8 -6.4	55.5		54 44.3 -5.0	56.7		55 16.7 -3.5	57.9		55 48.0 -1.9	59.1		56 18.2 -0.3	60.4		36
37	52 14.2 -11.5	50.7</td																							

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 44° , 316°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	38	32.0	-38.6	117.4	38	04.1	-39.5	118.1	37	35.5	-40.3	118.8	37	06.3	-41.1	119.4	36	36.6	-42.0	120.1	36	06.2	-42.8	120.7	35	35.3	-43.5	121.3	35	03.8	-44.2	121.9	0
1	37	53.4	-39.1	118.3	37	24.6	-39.9	119.0	36	55.2	-40.8	119.7	36	25.2	-41.6	120.3	35	54.6	-42.4	121.0	35	23.4	-43.1	121.6	34	51.8	-43.9	122.2	34	19.6	-44.6	122.8	1
2	37	14.3	-39.5	119.3	36	44.7	-40.4	120.0	36	14.4	-41.2	120.6	35	43.6	-42.0	121.2	35	12.2	-42.7	121.8	34	40.3	-43.5	122.4	34	07.9	-44.2	123.0	33	35.0	-45.0	123.6	2
3	36	34.8	-40.0	120.2	36	04.3	-40.2	120.9	35	33.2	-41.6	121.5	35	01.6	-42.3	122.1	34	29.5	-43.1	122.7	33	56.8	-43.8	123.3	33	23.7	-44.6	123.8	32	50.0	-45.2	124.4	3
4	35	54.8	-40.3	121.2	35	23.5	-41.2	121.8	34	51.6	-41.9	122.4	34	19.3	-42.7	123.0	33	46.4	-43.5	123.5	33	13.0	-44.2	124.1	32	39.1	-44.8	124.6	32	04.8	-45.5	125.1	4
5	35	14.5	-40.8	122.1	34	42.3	-41.5	122.7	34	09.7	-42.3	123.2	33	36.6	-43.1	123.8	33	02.9	-43.7	124.4	32	28.8	-44.4	124.9	31	54.3	-45.1	125.4	31	19.3	-45.7	125.9	5
6	34	33.7	-41.2	123.0	34	00.8	-41.9	123.5	33	27.4	-42.7	124.1	32	53.5	-43.4	124.6	32	19.2	-44.1	125.2	31	44.4	-44.7	125.7	31	09.2	-45.4	126.2	30	33.6	-46.0	126.7	6
7	33	52.5	-41.5	123.9	33	18.9	-42.3	124.4	32	44.7	-43.0	124.9	32	10.1	-43.6	125.5	31	35.1	-44.3	126.0	30	59.7	-45.0	126.5	30	23.8	-45.6	126.9	29	47.6	-46.3	127.4	7
8	33	11.0	-41.9	124.7	32	36.6	-42.6	125.3	32	01.7	-43.3	125.8	31	26.5	-44.0	126.3	30	50.8	-44.7	126.8	30	14.7	-45.3	127.2	29	38.2	-45.9	127.7	29	01.3	-46.5	128.1	8
9	32	29.1	-42.2	125.6	31	54.0	-42.8	126.1	31	18.4	-43.6	126.6	30	42.5	-44.3	127.1	30	06.1	-44.9	127.5	29	29.4	-45.5	128.0	28	52.3	-46.2	128.4	28	14.8	-46.7	128.8	9
10	31	46.9	-42.6	126.4	31	11.1	-43.3	126.9	30	34.8	-43.9	127.4	29	58.2	-44.5	127.8	29	21.2	-45.2	128.3	28	43.9	-45.8	128.7	28	06.1	-46.3	129.1	27	28.1	-46.9	129.6	10
11	31	04.3	-42.8	127.2	30	27.8	-43.5	127.7	29	50.9	-44.1	128.2	29	13.7	-44.8	128.6	28	36.0	-45.4	129.0	27	58.1	-46.0	129.5	26	41.2	-47.2	130.3	11				
12	30	21.5	-43.2	128.1	29	44.3	-43.8	128.5	29	06.8	-44.5	128.9	28	28.9	-45.1	129.4	27	50.6	-45.6	129.8	27	12.1	-46.2	130.2	26	33.2	-46.8	130.6	25	54.0	-47.3	130.9	12
13	29	38.3	-43.4	128.9	29	00.5	-44.1	129.3	28	22.3	-44.7	129.7	27	43.8	-45.3	130.1	27	05.0	-45.9	130.5	26	25.9	-46.5	130.9	25	46.4	-46.9	131.3	25	06.7	-47.5	131.6	13
14	28	54.9	-43.8	129.6	28	16.4	-44.3	130.1	27	37.6	-44.9	130.5	26	58.5	-45.5	130.9	26	19.1	-46.1	131.2	25	39.4	-46.3	131.6	24	19.2	-47.7	132.3	14				
15	28	11.1	-43.9	130.4	27	32.1	-44.6	130.8	26	52.7	-45.2	131.2	26	13.0	-45.7	131.6	25	33.0	-46.2	132.0	24	52.8	-46.8	132.3	24	12.3	-47.4	132.6	23	31.5	-47.8	133.0	15
16	27	27.2	-44.3	131.2	26	47.5	-44.8	131.6	26	07.5	-45.4	131.9	25	27.3	-46.0	132.3	24	46.8	-46.5	132.7	24	06.0	-47.0	133.0	23	24.9	-47.5	133.3	22	43.7	-48.0	133.6	16
17	26	42.9	-44.4	132.0	26	02.7	-45.1	132.3	25	22.1	-45.6	132.7	24	41.3	-46.1	133.0	24	00.3	-46.7	133.3	23	19.0	-47.2	133.7	22	37.4	-47.7	134.0	21	55.7	-48.2	134.3	17
18	25	58.5	-44.7	132.7	25	17.6	-45.2	133.1	24	36.5	-45.8	133.4	23	55.2	-46.3	133.7	23	13.6	-46.8	134.0	22	31.8	-47.4	134.3	21	07.5	-48.3	134.9	18				
19	25	13.8	-45.0	133.4	24	32.4	-45.5	133.8	23	50.7	-46.0	134.1	23	08.9	-46.5	134.4	22	26.8	-47.0	134.7	21	44.4	-47.5	135.0	20	19.2	-48.5	135.5	19				
20	24	28.8	-45.1	134.2	23	46.9	-45.6	134.5	23	04.7	-46.1	134.8	22	22.4	-46.7	135.1	21	39.8	-47.2	135.4	20	56.9	-47.6	135.7	20	13.9	-48.1	135.9	19	30.7	-48.5	136.2	20
21	23	43.7	-45.3	134.9	23	01.3	-45.8	135.2	22	18.6	-46.4	135.5	21	35.7	-46.9	135.8	20	52.6	-47.3	136.0	20	09.3	-47.8	136.3	19	25.8	-48.2	136.6	18	42.2	-48.7	136.8	21
22	22	58.4	-45.5	135.6	22	15.4	-46.0	135.9	21	32.2	-46.5	136.2	20	48.8	-47.0	136.4	20	05.3	-47.5	136.7	19	21.5	-47.9	136.9	18	37.6	-48.4	137.2	17	53.5	-48.8	137.4	22
23	22	12.9	-45.7	136.3	21	29.4	-46.2	136.6	20	45.7	-46.7	136.9	20	01.8	-47.1	137.1	19	17.8	-47.6	137.4	18	33.6	-48.1	137.6	17	49.2	-48.5	137.8	17	04.7	-48.9	138.0	23
24	21	27.2	-45.9	137.0	20	43.2	-46.3	137.3	19	59.0	-46.8	137.5	19	14.7	-47.3	137.8	18	30.2	-47.7	138.0	17	45.5	-48.1	138.2	17	00.7	-48.6	138.4	16	15.8	-49.1	138.6	24
25	20	41.3	-46.0	137.7	19	56.9	-46.5	138.0	19	12.2	-46.9	138.2	18	27.4	-47.4	138.4	17	42.5	-47.9	138.6	16	57.4	-48.3	138.8	16	12.1	-48.7	139.0	15	26.7	-49.1	139.2	25
26	19	55.3	-46.2	138.4	19	10.4	-46.7	138.6	18	25.3	-47.1	138.8	17	40.0	-47.5	139.1	16	54.6	-48.0	139.3	16	09.1	-49.4	139.5	15	23.4	-49.8	139.6	14	37.6	-49.2	139.8	26
27	19	09.1	-46.3	139.1	18	23.7	-46.8	139.3	17	38.2	-47.3	139.5	16	52.5	-47.7	139.7	16	06.6	-48.0	139.9	15	20.7	-48.5	140.1	14	34.6	-48.9	140.2	13	48.4	-49.3	140.4	27
28	18	22.8	-46.5	139.7	17	36.9	-46.9	139.9	16	50.9	-47.3	140.1	16	04.8	-47.8	140.3	15	18.6	-48.2	140.5	14	32.2	-48.6	140.7	13	45.7	-49.0	140.9	12	59.1	-49.3	141.0	28
29	17	36.3	-46.6	140.4	16	50.0	-47.0	140.6	15	12.3	-47.9	140.8	14	28.2	-48.7	141.2	13	39.5	-49.0	141.4	12	56.7	-49.4	141.6	11	09.8	-49.9	141.6	10	35.0	-49.1	141.6	34
30	16	49.3	-47.2	144.3	15	07.3	-47.6	144.4	14	28.4	-48.0	144.5	13	28.5	-48.4	144.6	12	0.3	-49.1	150.6	0	38.1	-49.3	150.6	0	14.2	+4.9	29.4	1	06.4	+4.9	29.4	45
31	15	07.7	-47.4	144.9	11	18.6	-47.8	145.0	10	29.4	-48.1	145.1	9	40.1	-48.4	145.2	8	50.8	-48.8	145.3	8	01.4	-49.1	145.4	7	12.0	-49.5	145.5	6	22.5	-49.8	145.6	36
32	11	20.3	-47.4	145.5	10	30.8	-47.7	145.6	9	41.3	-48.2	145.8	8	51.7	-48.5	145.8	7	02.0	-48.9	145.9	7	12.3	-49.2	146.0	5	32.7	-49.8	146.1	37				
33	10	32.9	-47.5	146.2	9	43.1	-48.7	146.3	8	53.1	-48.2	146.4	7																				

45°, 315° L.H.A.

LATITUDE SAME NAME AS DECLINATION

N. Lat. { L.H.A. greater than 180°Zn=7
L.H.A. less than 180°Zn=360°-Z

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.								
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z									
0	37	45.7	+37.7	116.6	37	18.5	+38.6	117.3	36	50.7	+39.5	117.9	36	22.3	+40.4	118.6	35	53.3	+41.3	119.2	35	23.8	+42.0	119.8	34	53.6	+42.9	120.4	34	23.0	+43.6	121.0	0
1	38	23.4	+37.2	115.6	37	57.1	+38.2	116.3	37	30.2	+39.1	117.0	37	02.7	+39.9	117.7	36	34.6	+40.8	118.3	36	05.8	+41.6	119.0	35	36.5	+42.4	119.6	35	06.6	+43.2	120.2	1
2	39	00.6	+36.6	114.6	38	35.3	+37.6	115.3	38	09.3	+38.6	116.0	37	42.6	+39.5	116.7	37	15.4	+40.3	117.4	36	47.4	+41.3	118.1	36	18.9	+42.1	118.7	35	49.8	+42.9	119.4	2
3	39	37.2	+36.2	113.5	39	12.9	+37.1	114.3	38	47.9	+38.0	115.0	38	22.1	+39.0	115.8	37	55.7	+39.9	116.5	37	28.7	+40.8	117.2	37	01.0	+41.6	117.8	36	32.7	+42.4	118.5	3
4	40	13.4	+35.5	112.5	39	50.0	+36.6	113.3	39	25.9	+37.6	114.0	39	01.1	+38.5	114.8	38	35.6	+39.5	115.5	38	09.5	+40.3	116.2	37	42.6	+41.2	116.9	37	15.1	+42.1	117.6	4
5	40	48.9	+35.0	111.4	40	26.6	+36.0	112.2	40	03.5	+37.0	113.0	39	39.6	+38.0	113.8	39	15.1	+38.9	114.5	38	49.8	+39.5	115.3	38	23.8	+40.8	116.0	37	57.2	+41.7	116.7	5
6	41	23.9	+34.3	110.4	41	02.6	+35.4	111.2	40	40.5	+36.4	112.0	40	17.6	+37.5	112.8	39	54.0	+38.5	113.6	39	29.7	+39.4	114.3	39	04.6	+40.4	115.1	38	38.9	+41.2	115.8	6
7	41	58.2	+33.7	109.3	41	38.0	+34.8	110.1	41	16.9	+35.9	110.9	40	55.1	+36.9	111.8	40	32.5	+37.9	112.5	40	09.1	+38.9	113.3	39	45.0	+39.8	114.1	39	20.1	+40.8	114.9	7
8	42	31.9	+33.0	108.2	42	12.8	+34.1	109.0	41	52.8	+35.3	109.9	41	32.0	+36.3	110.7	41	10.4	+37.3	111.5	40	48.0	+38.3	112.3	40	24.8	+39.3	113.1	40	00.9	+40.3	113.9	8
9	43	04.9	+32.4	107.0	42	46.9	+33.5	107.9	42	28.1	+34.6	108.8	42	08.3	+35.7	109.6	41	47.7	+36.8	110.5	41	26.3	+37.9	111.3	41	04.1	+38.9	112.1	40	41.2	+39.7	112.9	9
10	43	37.3	+31.6	105.9	43	20.4	+32.9	106.8	43	02.7	+33.9	107.7	42	44.0	+35.1	108.5	42	24.5	+36.2	109.4	42	04.2	+37.2	110.3	41	43.0	+38.2	111.1	41	20.9	+39.3	111.9	10
11	44	08.9	+30.9	104.7	43	53.3	+32.1	105.6	43	36.6	+33.3	106.5	43	19.1	+34.4	107.4	43	00.7	+35.5	108.3	42	41.4	+36.6	109.2	42	21.2	+37.7	110.1	42	00.2	+38.7	110.9	11
12	44	39.8	+30.2	103.5	44	25.4	+31.3	104.4	44	09.9	+32.6	105.4	43	53.5	+33.8	106.3	43	36.2	+34.9	107.2	43	18.0	+36.0	108.1	42	58.9	+37.1	109.0	42	38.9	+38.2	109.9	12
13	45	10.0	+29.3	102.3	44	56.7	+30.6	103.2	44	24.5	+31.8	104.2	44	27.3	+33.0	105.2	44	11.1	+34.2	106.1	43	54.0	+35.4	107.0	43	36.0	+36.5	107.9	43	17.1	+37.6	108.8	13
14	45	39.3	+28.5	101.0	45	27.3	+29.8	102.0	45	14.3	+31.1	103.0	45	00.3	+32.3	104.0	44	45.3	+33.5	104.9	44	29.4	+34.7	105.9	44	12.5	+35.8	106.8	43	54.7	+36.9	107.8	14
15	46	07.8	+27.7	99.7	45	57.1	+29.0	100.8	45	45.4	+30.3	101.8	45	32.6	+31.6	102.8	45	18.8	+32.8	103.8	45	04.1	+33.9	104.7	44	48.3	+35.2	105.7	44	31.6	+36.3	106.7	15
16	46	35.5	+26.8	98.5	46	26.1	+28.1	99.5	46	15.7	+29.4	100.5	46	04.2	+30.7	101.6	45	51.6	+32.0	102.6	45	38.0	+33.3	103.6	45	23.5	+34.4	104.6	45	07.9	+35.6	105.5	16
17	47	02.3	+25.8	97.2	46	54.2	+27.3	98.2	46	45.1	+28.6	99.3	46	34.9	+29.9	100.3	46	23.6	+31.2	101.4	46	11.3	+32.5	102.4	45	57.9	+33.7	103.4	45	43.5	+34.9	104.4	17
18	47	28.1	+25.0	95.8	47	21.5	+26.3	96.9	47	13.7	+27.7	98.0	47	04.8	+29.1	99.0	46	54.8	+30.4	100.1	46	31.6	+33.0	102.2	46	18.4	+34.2	103.2	18				
19	47	53.1	+23.9	94.5	47	47.8	+25.4	95.6	47	41.4	+26.8	96.7	47	33.9	+28.1	97.8	47	25.2	+29.5	98.8	47	15.4	+30.9	99.7	47	04.6	+32.1	101.0	46	52.6	+33.4	102.0	19
20	48	17.0	+23.0	93.1	48	13.2	+24.4	94.2	48	08.2	+25.9	95.3	48	02.0	+27.3	96.4	47	54.7	+28.7	97.5	47	46.3	+30.0	98.6	47	36.7	+31.3	99.7	47	26.0	+32.7	100.8	20
21	48	40.0	+22.0	91.7	48	37.6	+23.5	92.8	48	34.1	+24.8	94.0	48	29.3	+26.3	95.1	48	23.4	+27.7	96.2	48	16.3	+29.1	97.3	48	08.0	+30.5	98.5	47	58.7	+31.8	99.6	21
22	49	02.0	+20.9	90.3	49	01.1	+22.4	91.4	48	58.9	+23.9	92.6	48	55.6	+25.4	93.7	48	51.1	+26.8	94.9	48	45.4	+28.2	96.0	48	38.5	+29.6	97.2	48	30.5	+30.9	98.3	22
23	49	22.9	+19.8	88.9	49	23.5	+21.3	90.0	49	22.8	+22.9	91.2	49	21.0	+24.3	92.4	49	17.9	+25.8	93.5	49	13.6	+27.2	94.7	49	08.1	+28.6	95.8	49	01.4	+30.0	97.0	23
24	49	42.7	+18.7	87.4	49	44.8	+20.2	88.6	49	45.7	+21.7	89.8	49	45.3	+23.3	90.9	49	43.7	+24.7	92.1	49	40.8	+26.3	93.3	49	36.7	+27.7	94.5	49	31.4	+29.2	95.7	24
25	50	01.4	+17.6	85.9	50	05.0	+19.2	87.1	50	07.4	+20.7	88.3	50	08.6	+22.2	89.5	50	08.4	+23.8	90.7	50	07.1	+25.2	91.9	50	04.4	+26.7	93.1	50	00.6	+28.1	94.3	25
26	50	19.0	+16.4	84.4	50	24.2	+18.0	85.6	50	28.1	+19.5	86.9	50	30.8	+21.1	88.1	50	32.2	+22.6	89.3	50	32.3	+24.1	90.5	50	31.1	+25.7	91.7	50	28.7	+27.2	92.9	26
27	50	35.4	+15.2	82.9	50	42.2	+16.8	84.1	50	47.6	+18.4	85.4	50	51.9	+19.9	86.6	50	54.8	+21.5	87.8	50	56.4	+23.1	89.0	50	56.8	+24.6	90.3	50	55.9	+26.1	91.5	27
28	50	50.6	+14.1	81.4	50	59.0	+15.6	82.6	51	06.0	+17.3	83.8	51	11.8	+18.8	85.1	51	16.3	+20.4	86.3	51	19.5	+22.0	87.6	51	21.4	+23.5	88.8	51	22.0	+25.0	90.1	28
29	51	04.7	+12.7	79.9	51	14.3	+8.0	81.0	51	23.3	+16.0	82.3	51	30.6	+17.6	83.6	51	36.7	+19.2	84.8	51	41.5	+20.6	86.1	51	44.9	+22.4	87.3	51	47.0	+24.0	88.6	29
30	51	29.0	+13.1	79.5	51	39.3	+14.7	80.8	51	48.2	+16.4	82.0	51	55.9	+18.0	83.3	52	02.3	+19.6	84.6	52	07.3	+21.2	85.8	52	11.0	+22.8	87.1	50	30.3	+23.7	88.4	30
31	51	29.0	+10.3	76.7	51	41.2	+11.9	78.0	51	54.0	+13.5	79.2	52	04.6	+15.1	80.5	52	13.9	+16.7	81.7	52	21.9	+18.3	83.0	52	28.5	+20.0	84.3	52	33.8	+21.6	85.6	31
32	51	39.3	+8.9	75.1	51	54.0	+10.6	76.4	52	07.5	+12.2	77.6	52	19.7	+13.9	78.9	52	30.6	+15.6	80.2	52	40.2	+20.2	81.5	52	48.5	+18.7	82.8	52	55.4	+20.4	84.1	32
33	51	51.9	+6.4																														

LATITUDE CONTRARY NAME TO DECLINATION

L.H.A. 45°, 315°

Dec.	30°			31°			32°			33°			34°			35°			36°			37°			Dec.
	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	Hc	d	Z	
0	37 45.7 -38.2	116.6	37 18.5 -39.1	117.3	36 50.7 -39.9	117.9	36 22.3 -40.8	118.6	35 53.3 -41.6	119.2	35 23.8 -42.4	119.8	34 53.6 -43.1	120.4	34 23.0 -43.9	121.0	34 0.0 -43.9	121.0	34 23.0 -43.9	121.0	34 23.0 -43.9	121.0	34 23.0 -43.9	121.0	0
1	37 07.5 -38.7	117.5	36 39.4 -39.5	118.2	36 10.8 -40.4	118.8	35 41.5 -41.1	119.5	35 11.7 -42.0	120.1	34 41.4 -42.8	120.7	34 10.5 -43.5	121.3	33 39.1 -44.3	121.9	33 27.0 -43.9	122.1	32 54.8 -44.5	122.7	32 54.8 -44.5	122.7	32 54.8 -44.5	122.7	1
2	36 28.8 -39.1	118.5	35 59.9 -39.9	119.1	35 30.4 -40.8	119.8	35 0.4 -41.6	120.4	34 29.7 -42.3	121.0	33 58.6 -43.1	121.6	33 27.0 -43.9	122.1	32 50.8 -44.4	122.7	32 43.1 -44.1	122.9	32 10.3 -44.9	123.5	32 10.3 -44.9	123.5	32 10.3 -44.9	123.5	2
3	35 49.7 -39.5	119.4	35 20.0 -40.4	120.1	34 49.6 -41.1	120.7	34 18.8 -42.0	121.2	33 47.4 -42.7	121.8	33 15.5 -43.4	122.4	32 43.1 -44.1	122.9	32 0.0 -44.5	123.7	31 59.0 -44.5	123.7	31 25.4 -45.1	124.2	31 25.4 -45.1	124.2	31 25.4 -45.1	124.2	3
4	35 10.2 -40.0	120.4	34 39.6 -40.8	121.0	34 08.5 -41.6	121.5	33 36.8 -42.3	122.1	33 04.7 -43.0	122.7	32 32.1 -43.8	123.2	31 59.0 -44.5	123.7	31 0.0 -44.5	124.2	30 40.3 -45.4	125.0	30 40.3 -45.4	125.0	30 40.3 -45.4	125.0	30 40.3 -45.4	125.0	4
5	34 30.2 -40.3	121.3	33 58.8 -41.1	121.8	33 26.9 -41.9	122.4	32 54.5 -42.6	123.0	32 21.7 -43.4	123.5	31 48.3 -44.0	124.0	31 14.5 -44.7	124.5	30 40.3 -45.4	125.0	30 40.3 -45.4	125.0	30 40.3 -45.4	125.0	30 40.3 -45.4	125.0	30 40.3 -45.4	125.0	5
6	33 49.9 -40.7	122.2	33 17.7 -41.5	122.7	32 45.0 -42.2	123.3	32 11.9 -43.0	123.8	31 38.3 -43.7	124.3	31 0.3 -44.4	124.8	30 29.8 -45.0	125.3	29 54.9 -45.6	125.8	29 0.0 -45.0	125.8	29 0.0 -45.0	125.8	29 0.0 -45.0	125.8	29 0.0 -45.0	125.8	6
7	33 09.2 -41.1	123.0	32 36.2 -41.8	123.6	32 02.8 -42.6	124.1	31 28.9 -43.2	124.6	30 54.6 -43.9	125.1	30 19.9 -44.6	125.6	29 44.8 -45.3	126.1	29 0.9 -45.9	126.5	29 0.9 -45.9	126.5	29 0.9 -45.9	126.5	29 0.9 -45.9	126.5	29 0.9 -45.9	126.5	7
8	32 28.1 -41.5	123.9	31 54.4 -42.2	124.4	31 20.2 -42.8	124.9	30 45.7 -43.6	125.4	30 10.7 -44.3	125.9	29 35.3 -44.9	126.4	28 59.5 -45.5	126.8	28 23.4 -46.1	127.3	28 14.0 -45.7	127.6	27 37.3 -46.4	128.0	27 37.3 -46.4	128.0	27 37.3 -46.4	128.0	8
9	31 46.6 -41.8	124.8	31 12.2 -42.5	125.3	30 37.4 -43.2	125.7	30 02.1 -43.9	126.2	29 26.4 -44.5	126.7	28 50.4 -45.1	127.1	28 14.0 -45.7	127.6	27 37.3 -46.4	128.0	27 37.3 -46.4	128.0	27 37.3 -46.4	128.0	27 37.3 -46.4	128.0	9		
10	31 04.8 -42.1	125.6	30 29.7 -42.8	126.1	29 54.2 -43.5	126.6	29 18.2 -44.1	127.0	28 41.9 -44.7	127.4	28 0.5 -45.4	127.9	27 28.3 -46.0	128.3	26 50.9 -46.5	128.7	26 50.9 -46.5	128.7	26 50.9 -46.5	128.7	26 50.9 -46.5	128.7	10		
11	30 22.7 -42.4	126.4	29 46.9 -43.1	126.9	29 10.7 -43.7	127.3	28 34.1 -44.4	127.8	27 57.2 -45.0	128.2	27 19.9 -45.6	128.6	26 42.3 -46.2	129.0	26 0.4 -46.8	129.4	26 0.4 -46.8	129.4	26 0.4 -46.8	129.4	26 0.4 -46.8	129.4	11		
12	29 40.3 -42.7	127.2	29 0.3 -43.3	127.7	28 27.0 -44.1	128.1	27 49.7 -44.6	128.5	27 12.2 -45.3	129.0	26 34.3 -45.8	129.3	25 56.1 -46.4	129.7	25 17.6 -46.9	130.1	25 17.6 -46.9	130.1	25 17.6 -46.9	130.1	25 17.6 -46.9	130.1	12		
13	28 57.6 -43.0	128.1	28 20.5 -43.7	128.5	27 42.9 -44.2	128.9	27 05.1 -44.9	129.3	26 26.9 -45.4	129.7	25 48.5 -46.1	130.1	25 09.7 -46.7	130.4	24 30.7 -47.2	130.8	24 30.7 -47.2	130.8	24 30.7 -47.2	130.8	24 30.7 -47.2	130.8	13		
14	28 14.6 -43.3	128.8	27 36.8 -43.9	129.3	26 58.7 -44.5	129.7	26 20.2 -45.1	130.0	25 41.5 -45.7	130.4	25 02.4 -46.2	130.8	24 23.1 -46.8	131.1	23 43.5 -47.3	131.5	23 43.5 -47.3	131.5	23 43.5 -47.3	131.5	23 43.5 -47.3	131.5	14		
15	27 31.3 -43.5	129.6	26 52.9 -44.1	130.0	26 14.2 -44.8	130.4	25 35.1 -45.3	130.8	24 55.8 -45.9	131.1	24 16.2 -46.4	131.5	23 36.3 -46.8	131.8	22 56.2 -47.5	132.1	22 56.2 -47.5	132.1	22 56.2 -47.5	132.1	22 56.2 -47.5	132.1	15		
16	26 47.8 -43.8	130.4	26 08.8 -44.4	130.8	25 29.4 -44.9	131.1	24 49.8 -45.5	131.5	24 09.9 -46.0	131.8	23 29.8 -46.6	132.2	22 49.4 -47.2	132.5	22 08.7 -47.6	132.8	22 08.7 -47.6	132.8	22 08.7 -47.6	132.8	22 08.7 -47.6	132.8	16		
17	26 04.0 -44.0	131.2	25 24.4 -44.6	131.5	24 44.5 -45.2	131.9	24 04.3 -45.7	132.2	23 23.9 -46.3	132.5	22 43.2 -46.8	132.9	22 02.2 -47.2	133.2	21 21.1 -47.8	133.4	21 21.1 -47.8	133.4	21 21.1 -47.8	133.4	21 21.1 -47.8	133.4	17		
18	25 20.0 -44.2	131.9	24 39.8 -44.8	132.3	23 59.3 -45.3	132.6	23 18.6 -45.9	132.9	22 37.6 -46.4	133.2	21 56.4 -47.0	133.5	21 15.0 -47.5	133.8	20 33.3 -47.9	134.1	20 33.3 -47.9	134.1	20 33.3 -47.9	134.1	20 33.3 -47.9	134.1	18		
19	24 35.8 -44.5	132.7	23 55.0 -45.0	133.0	23 14.0 -45.6	133.3	22 32.7 -46.1	133.6	21 51.2 -46.6	133.9	21 09.4 -47.1	134.2	20 27.5 -47.6	134.5	19 45.4 -48.1	134.7	19 45.4 -48.1	134.7	19 45.4 -48.1	134.7	19 45.4 -48.1	134.7	19		
20	23 51.3 -44.6	133.4	23 10.0 -45.2	133.7	22 28.4 -45.7	134.0	21 46.6 -46.3	134.3	21 04.6 -46.8	134.6	20 22.3 -47.2	134.9	19 39.9 -47.7	135.1	18 57.3 -48.2	135.4	18 57.3 -48.2	135.4	18 57.3 -48.2	135.4	18 57.3 -48.2	135.4	20		
21	23 06.7 -44.9	134.1	22 24.8 -45.4	134.4	21 42.7 -46.0	134.7	21 00.3 -46.4	135.0	20 17.8 -46.9	135.3	19 35.1 -47.4	135.5	18 52.2 -47.8	135.8	18 09.1 -48.3	136.0	18 09.1 -48.3	136.0	18 09.1 -48.3	136.0	18 09.1 -48.3	136.0	21		
22	22 21.8 -45.1	134.9	21 39.4 -45.6	135.1	20 56.7 -46.0	135.4	20 13.9 -46.6	135.7	19 30.9 -47.1	135.9	18 47.7 -47.5	136.2	18 04.3 -47.9	136.4	17 20.8 -48.4	136.6	17 20.8 -48.4	136.6	17 20.8 -48.4	136.6	17 20.8 -48.4	136.6	22		
23	21 36.7 -45.2	135.6	20 53.8 -45.7	135.8	20 10.7 -46.3	136.1	19 27.3 -46.7	136.3	18 43.8 -47.1	136.6	18 00.2 -47.7	136.8	17 16.4 -48.1	137.0	16 32.4 -48.6	137.2	16 32.4 -48.6	137.2	16 32.4 -48.6	137.2	16 32.4 -48.6	137.2	23		
24	20 51.5 -45.4	136.3	20 08.1 -45.6	136.5	19 24.4 -46.4	136.8	18 40.6 -46.8	137.0	17 56.7 -47.4	137.2	17 12.5 -47.7	137.4	16 28.3 -48.2	137.7	15 43.8 -48.6	137.8	15 43.8 -48.6	137.8	15 43.8 -48.6	137.8	15 43.8 -48.6	137.8	24		
25	20 06.1 -45.6	137.0	19 22.2 -46.1	137.2	18 38.0 -46.5	137.4	17 53.8 -47.0	137.7	17 09.3 -47.4	137.9	16 24.8 -47.9	138.1	15 40.1 -48.4	138.3	14 55.2 -48.7	138.5	14 55.2 -48.7	138.5	14 55.2 -48.7	138.5	14 55.2 -48.7	138.5	14 55.2 -48.7	138.5	25
26	19 20.5 -45.7	137.7	18 36.1 -46.2	137.9	17 51.5 -46.6	138.1	17 06.8 -47.1	138.3	16 21.9 -47.6	138.5	15 36.9 -48.0	138.7	14 51.7 -48.4	138.9	14 06.5 -48.8	139.1	14 06.5 -48.8	139.1	14 06.5 -48.8	139.1	14 06.5 -48.8	139.1	26		
27	18 34.8 -45.9	138.3	17 49.9 -46.3	138.6	17 04.9 -46.8	138.8	16 19.7 -47.3	139.0	15 34.3 -47.6	139.2	14 48.9 -48.1	139.3	14 03.3 -48.5	139.5	13 17.7 -49.0	139.7	13 17.7 -49.0	139.7	13 17.7 -49.0	139.7	13 17.7 -49.0	139.7	27		
28	17 48.9 -46.0	139.0	17 03.6 -46.8	139.2	16 18.1 -46.9	139.4	15 32.4 -47.3	139.6	14 58.8 -48.3	139.8	14 00.8 -48.2	139.9	13 14.8 -48.6	140.1	12 28.7 -48.9	140.2	12 28.7 -48.9	140.2	12 28.7 -48.9	140.2	12 28.7 -48.9	140.2	28		
29	17 02.9 -46.1	139.7	16 17.1 -46.9	140.1	15 23.1 -47.1	140.3	14 47.0 -48.1	140.4	13 51.7 -48.6	140.5	13 0.7 -48.6	140.6	12 26.2 -48.6	140.7	11 39.8 -49.1	140.8	11 39.8 -49.1	140.8	11 39.8 -49.1	140.8	11 39.8 -49.1	140.8	43		
30	0 36.5 -47.5	153.0	0 17.0 +47.7																						